BOOK OF ABSTRACTS

National Conference

on

Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches

28-30 January, 2024

Venue : ICAR-ATARI, Jabalpur, Madhya Pradesh, India

ORGANIZED BY

International Society of Extension Education (INSEE), Nagpur
ICAR-Agricultural Technology Application Research Institute (ATARI), Jabalpur
Jawaharlal Nehru Krishi Vishwavidyalaya (JNKVV), Jabalpur
National Institute of Agricultural Extension Management (MANAGE), Hyderabad
Regional Center for Organic and Natural Farming (RCNOF), Nagpur
Participatory Rural Development Initiatives Society (PRDIS), Hyderabad

NATIONAL CONFERENCE

on

Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches

28-30 January, 2024

BOOK OF ABSTRACTS

ORGANIZED BY

International Society of Extension Education (INSEE), Nagpur
ICAR-Agricultural Technology Application Research Institute (ATARI), Jabalpur
Jawaharlal Nehru Krishi Vishwavidyalaya (JNKVV), Jabalpur
National Institute of Agricultural Extension Management (MANAGE), Hyderabad
Regional Center for Organic and Natural Farming (RCNOF), Nagpur
Participatory Rural Development Initiatives Society (PRDIS), Hyderabad

National Conference

on

Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches

Guidance

Dr. K. Narayan Gowda, President, INSEE & Former VC, UAS, Bangalore
Dr. U. S. Gautam, DDG (AE), ICAR, New Delhi
Dr. A.K. Singh, VC, RLBCAU, Jhansi, U.P
Dr. P. Chandra Shekara, Director General, MANAGE, Hyderabad
Dr. V.V. Sadamate, Former Advisor (Agri.) Planning Commission, GOI, New Delhi
Dr. Y. K. Karki, Former Secretary, Agriculture, G. O. Nepal, Kathmandu, Nepal

Editorial Committee (National)

Dr. S.R.K. Singh, Director, ATARI, Jabalpur
Capt. Dr. L.B. Kalantri, Secretary General, INSEE & Ex. Director of Sericulture, Govt. of Maharashtra
Dr. M.K. Rathod, Prof., Ext. Edu., College of Agriculture, Nagpur
Dr. P.K. Singh, Pr. Scientist, DWR, Jabalpur
Dr. D.K. Jaiswal, Prof. & Head Dept. of Extn. Education, JNKVV, Jabalpur
Dr. N. V. Kumbhare Pr. Scientist, Division of Agri. Ext., IARI, New Delhi
Dr. A.A. Raut, Scientist, ATARI, Jabalpur

Editorial Committee (Local)

Dr. Moni Thomas, Pr. Scientist & Director, ABM, JNKVV, Jabalpur
Dr. Prashant Shrivastava, Asst. Professor, JNKVV, Jabalpur
Dr. Seema Naberia, Asst. Professor, JNKVV, Jabalpur
Dr. Kamini Bisht, Asst. Professor, JNKVV, Jabalpur
Dr. Sonam Agrawal, Asst. Professor, JNKVV, Jabalpur
Dr. Harish M.N., Scientist, ATARI, Jabalpur
Dr. Varsha Shrivastava, RA, ATARI, Jabalpur
Dr. Shrishti Bilaiya, SRF, ATARI, Jabalpur
Dr. Venkteshwar Jallaraph, SRF, ATARI, Jabalpur
Ms Neha Kushwaha, PhD Scholar, JNKVV, Jabalpur

Design & printed at:

M/s Royal Offset Printers, A-89/1, Naraina Industrial Area, Phase-I, New Delhi - 110028
Phone : 9811622258

ऐदल सिंह कंषाना

मंत्री, म.प्र. शासन
किसान कल्याण एवं कृषि विकास

निवास : बी-3, श्यामला हिल्स
भोपाल (म.प्र.)
क्षेत्रीय कार्यालय : व्हाइट हाउस
बिस्मिल नगर, मुरैना (म.प्र.)
दूरभाष : 0755-2551736 (कार्या.)
0755-4864262 (निवास)
मोबाइल : 9425126871

क्रमांक...66...../मं/कि.क.कृ.वि./2024

दिनांक 23/01/2024

संदेश

यह एक अत्यंत हर्ष का विषय है कि प्रसार शिक्षा की अंतर्राष्ट्रीय सोसाइटी, नागपुर के द्वारा तीन दिवसीय राष्ट्रीय संगोष्ठी अगली पीढ़ी की कृषि हेतु – जैविक एवं प्राकृतिक कृषि तरीकों के लिए प्रसार रणनीति एवं तरीका का आयोजन 28 से 30 जनवरी 2024 के दौरान भा.कृ.अनु.प.–अटारी जबलपुर में किया जा रहा है। जिसमें देश व विदेश के वैज्ञानिक, शोधार्थी व किसानों की सहभागिता होने वाली है।

इस संगोष्ठी का विषय सामयिक है, जो कि भारतीय परम्परागत कृषि तकनीकें पर आधारित है तथा यह पद्धितियों कृषि पारिस्थितिकी को बनाये रखने में सहयोग करती है। किसानों के लिए ये तकनीकें लाभप्रद है, क्योंकि यह न केवल कृषि लागत में कमी लायेगी बल्कि कृषि उत्पादों को पोषण युक्त बनाती है जो कि प्रर्यावरण व मानव स्वास्थ्य के लिए अनुकूल है।

मुझे आशा है कि इस संगोष्ठी के आयोजन से किसानों को जैविक व प्राकृतिक खेती की तकनीकों के बारे में जानकारी मिलेगी। इसके साथ ही वैश्विक बाजार के अनुरूप जैविक व प्रकृतिक उत्पादों के विपणन का मार्ग प्रशस्त करने हेतु विस्तार नीतियों को बनाने में मदद मिलेगी, जिससे किसानों की आय में बढ़ोत्तरी हो सके।

मैं इस संगोष्ठी की सफलता के लिए हार्दिक शुभकामनाऐं देता हूँ।

दिनांक

(ऐंदल सिंह कंषाना)

मंत्री,
किसान कल्याण एवं कृषि विकास
मध्यप्रदेश शासन

लखन पटेल
राज्यमंत्री (स्वतंत्र प्रभार)
पशु-पालन एवं डेयरी विभाग
मध्यप्रदेश शासन

मंत्रलय- कक्ष क्रं-E-205 VB III
निवास : पलंदी चौराहा, दमोह (म.प्र.) 470 661
वि.स.क्षे.क्र.- 54 पथरिया
मोबा. 9425095703

क्रमांक 63/2024

दिनांक 25/01/2024.

शुभकामना संदेश

जैविक एवं प्रातिक खेती प्रकृति के अनुरूप कृषि पद्धतियाँ है, जो रसायनमुक्त कृषि उत्पाद उपलब्ध कराती है। वर्तमान समय में जैविक एवं प्राकृतिक उत्पादों की अधिक माँग है तथा यह उत्पाद मानव स्वास्थ्य एवं प्रकृति दोनों के लिए उपयोगी है।

यह जानकर मुझे अत्यंत प्रसन्नता हुई कि प्रसार शिक्षा की अंतर्राष्ट्रीय सोसाइटी, नागपुर द्वारा राष्ट्रीय संगोष्ठी का आयोजन भा.कृ.अनु.प–अटारी जबलपुर में दिनांक 28 से 30 जनवरी 2024 के दौरान किया जा रहा है। इस संगोष्ठी का विषय 'अगली पीढ़ी की कृषि हेतु – जैविक एवं प्राकृतिक कृषि तरीकों के लिए प्रसार रणनीति एवं तरीका' सामयिक है ।

मुझे पूर्ण आशा है, कि यह विवेचन सभी वैज्ञानिकों, विस्तार विषेशज्ञों व किसानों के लिए लाभप्रद होगा।

मैं इस संगोष्ठी की सफलता के लिये अपनी शुभकामनायें प्रेषित करता हूँ।

(लखन पटेल)

सत्यमेव जयते

डॉ. हिमांशु पाठक
DR. HIMANSHU PATHAK
सचिव (डेयर) एवं महानिदेशक (आईसीएआर)
Secretary (DARE) &
Director General (ICAR)

भारत सरकार
कृषि अनुसंधान और शिक्षा विभाग एवं
भारतीय कृषि अनुसंधान परिषद
कृषि एवं किसान कल्याण मंत्रालय, कृषि भवन, नई दिल्ली–110 001

GOVERNMENT OF INDIA
DEPARTMENT OF AGRICULTURAL RESEARCH AND EDUCATION (DARE)
AND
INDIAN COUNCIL OF AGRICULTURAL RESEARCH (ICAR)
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
Krishi Bhavan, New Delhi 110 001
Tel: 23382629 / 23386711 Fax: 91-11-23384773
E-mail: dg.icar@nic.in

MESSAGE

I am happy to know that the International Society of Extension Education, Nagpur is organizing a National Conference on "Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches" at ICAR-ATARI, Jabalpur during January 28-30, 2024.Transforming agriculture and food system has to be sustainable, resilient, nutritious and productive to meet the needs of the future generations. Organic and Natural farming systems have emerged as potential sectors as it relies on diversity, on-farm biomass management, rejuvenation of natural nutrient recycling, crop rotation, multiple cropping and efficient resource recycling.

The deliberations during the conference will be helpful in chalking out suitable extension strategies for promotion of organic and natural farming at wider scale by creating awareness and developing skills of the farmers, agri-preneurs and extension professionals. The conference will also develop plan for regulation and certification of organic and natural farming produce.

I wish the conference a grand success.

(Himanshu Pathak)

19th January, 2024
New Delhi

MESSAGE

Agriculture is undergoing tremendous change. The transformation in agriculture has to align with sustainability in all aspects i.e. Environmental, Economic and Social Sustainability. Among the alternative agriculture systems, organic and natural farming are receiving much attention in the recent years as indiscriminate use of chemicals fertilizers and pesticides has led to a rapid deterioration of soil fertility, posing a significant threat to long-term food security. The chemical free farming system is deeply rooted in Indian tradition and enriched with a modern understanding of ecology, resource recycling and on-farm resource optimization. It integrates crops, trees and livestock with functional biodiversity, complementarity, emphasizing on-farm biomass recycling, mulching and the use of cow dung-urine formulations while excluding synthetic chemical inputs.

Natural Farming basically aims to sustain the farmer's yield by maximizing natural inputs and by avoiding the use of non-natural inputs viz., fertilizer, herbicides and pesticides to optimize production potential and thus provide abundant, high quality, healthy food at the best price to the consumers.

In recent years, the Government of India is promoting Natural Farming in a big way to promote chemical-free farming. Center and state governments are promoting chemical free farming through various schemes such as *Bharatiya Prakritik Krishi Paddhati* (BPKP), Andhra Pradesh Community Managed Natural farming, establishing *Prakritik Krishi Vikas Board etc* to popularize the adoption of Natural Farming among the farmers in different parts of the country.

It is a matter of great pleasure that National Conference on **Next Generation Agriculture-Organic and Natural Farming Pathways: Extension Strategies & Approaches** is being organized at ICAR-ATARI, Jabalpur from 28-30th January 2024. This National Conference will be useful to understand various practices from different parts of India. This initiative would help to identifying sustainable models in agriculture for stakeholders such as policy makers, researchers, academicians and more importantly for the farming community.

Besides the oral poster presentations from delegates, farmers' interactions, exhibition and panel discussion will be highly useful for coming up with suitable policy implications to promote organic and natural farming for benefitting farmers.

I extend my best wishes for successful organization of the National Conference.

Dated: 25.01.2024

Place: Hyderabad

(P. Chandra Shekara)
Director General
MANAGE, Hyderabad

भाकृअनुप
ICAR
डॉ. ऊधम सिंह गौतम
उप महानिदेशक (कृषि विस्तार)
Dr. U.S. Gautam
Deputy Director General (Agril. Extn.)

भारतीय कृषि अनुसंधान परिषद
कृषि अनुसंधान भवन–1, पूसा, नई दिल्ली 110 012
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
Krishi Anusandhan Bhawan-I, Pusa, New Delhi – 110012
Phone: 91-11-25843277 (O)
E-mail: ddg-extn.icar@gov.in ; us.gautam@icar.gov.in

MESSAGE

Next generation agriculture is the need of the era for wellbeing of the human and other creatures living on this planet. Promotion and adoption of Organic and Natural Farming is required to move on One Health One Earth pathway by overcoming from the exploitation of natural resources and detrimental effect of the agro-chemicals. Effective extension approaches have a crucial role to play in sustaining the momentum and facilitating knowledge exchange and networking among farmers practicing organic and natural farming.

I am happy to know that a National Conference on **"Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches**" is being organized at ICAR-ATARI, Jabalpur during January 28-30, 2024.

In view of this, the subject of the conference is very pertinent and I am hopeful that the deliberation in the proposed conference will bring out important recommendations to scale up Organic and Natural Farming.

I convey my best wishes to the organizers as well as the participants for grand success of the conference.

(U. S. Gautam)

भारतीय कृषि अनुसंधान परिषद
कक्ष क्र. 101, कृषि अनुसंधान भवन–II, नई दिल्ली–110 012, भारत
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
Room No. 101, Krishi Anusandhan Bhavan-II, Pusa, New Delhi-110012, India

डॉ. सुरेश कुमार चौधरी
उप महानिदेशक (प्राकृतिक संसाधन प्रबंधन)
Dr. Suresh Kumar Chaudhari
Deputy Director General (Natural Resources Management)

22.01.2024

MESSAGE

I convey my heartfelt greetings to all participants and contributors of the National Conference on **"Next Generation Agriculture - Organic and Natural Farming Pathways: Extension Strategies and Approaches"**, taking place in Jabalpur. Over the course of the last half-century, agricultural practices in India have embarked on a journey towards sustainability. The current paradigm, however, remains predominantly focused on maximizing output, often at the expense of soil vitality and broader ecological considerations. The deleterious consequences of contemporary agricultural techniques, as evidenced globally, extend far beyond the confines of the farm, impacting the well-being of all living entities and, by extension, the environment at large. Internationally, there is a growing consensus regarding the imperative to transition from traditional agricultural methodologies to ones that are inherently more sustainable. The burgeoning demand for 'organic' produce among the health-conscious populace can be attributed to the detrimental impacts of rampant pesticide use. This scenario underscores the necessity of reorienting our efforts and embracing a variety of strategies to foster the advancement of sustainable agriculture. This includes the integration of organic and natural farming methods, among other pertinent practices.

I would like to extend my warmest congratulations and best wishes to the organizers for their dedication and efforts in facilitating this academic forum. It is my earnest hope that this event will achieve resounding success and foster meaningful dialogue and progress in the field of sustainable agriculture.

22/01/24

(S.K. Chaudhari)

Ph.: +91-11-25848364 Fax: +91-11-25848366 Email: ddg.nrm@icar.gov.in Website: www.icar.org.in

प्रो. प्रमोद कुमार मिश्रा
कुलपति
Prof. Pramod Kumar Mishra
Vice Chancellor

जवाहरलाल नेहरू कृषि विश्वविद्यालय
कृषि नगर, अधारताल, जबलपुर ४८२ ००४ (म.प्र.)
Jawaharial Nehru Krishi Vishwa Vidyalaya
Krishi Nagar, Adhartal, Jabalpur 482 004 (M.P.)
Ph.: 0761-2681706 (O), Fax: 0761-2681389
E-mail: mishravcjnkvv@gmail.com

MESSAGE

I am pleased to welcome and extend my heartfelt greetings to all the esteemed participants, scientists, students and delegates from abroad at JNKVV, Jabalpur for **National Conference on Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches**. Natural Farming is understood by us as the direction and process of transition towards a more local, resilient and adaptive agro-ecology based farming. India has a rich heritage of traditional farming practices which are environment friendly and less resource intensive. The origin of natural farming practices currently practiced can be traced back to this ancient knowledge. The conservation and management of natural resources is essential to ensure sustainable development of agriculture in future.

This transformative journey necessitates the integration of practices such as organic farming, natural farming and other relevant approaches, all of which contribute to a holistic and environmentally conscious agricultural paradigm. Organic and Natural farming has a number of advantages over conventional farming, including low capital investment and a productivity per unit area of land. Our collective commitment to sustainable agriculture ensures a resilient and balanced approach that meets the needs of the present without compromising the ability of future generations to meet their needs.This Conference serves as a unique opportunity for sharing expertise and experiences in organic and natural farming. Renowned speakers from across India and abroad will contribute their insights, fostering scientific collaboration and friendship among scientists, students, and institutes. The exchange of knowledge and ideas is integral to our shared pursuit of sustainable agriculture, and I am confident that this conference will be a platform for valuable insights, discussions, and networking.

As we strive towards a future of sustainable agriculture and a better tomorrow for our planet, it is important that we work collaboratively and share our expertise and ideas. I am delighted that JNKVV is a part of this collaborative effort and I look forward to the valuable insights and discussions that will emerge from this conference.

(P.K.Mishra)

राजमाता विजयाराजे सिंधिया कृषि विश्वविद्यालय
राजा पंचम सिंह मार्ग, ग्वालियर (म.प्र.) – 474002
Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya,
Raja Pancham Singh Marg, Gwalior (M.P.) – 474 002
(An ISO Certified 9001:2008)
Tel: 0751 – 2970502, Fax: 0751 – 2970504,
E-mail: vcrvsaugwa@mp.gov.in; vc@rvskvv.net

प्रो. अरविन्द कुमार शुक्ला
कुलपति
Prof. Arvind Kumar Shukla
Vice-Chancellor

क्रं. / कुल. / 2024 / 2563
दिनांक: 24/01/2024

MESSAGE

I am very happy to know that International Institute of Extension Education, Nagpur collaboration with ICAR-ATARI, Jabalpur and JNKVV is organising **National Conference on Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches**.

There is a growing consensus that the contemporary farming system is becoming unsustainable, evident in declining crop yields, environmental damage, chemical contaminations and other related issues. The necessity of having an alternative agriculture method which can function in a friendly eco-system while sustaining and increasing the crop productivity is realized now. Organic and Natural farming are recognized as some of the best known alternatives to the conventional agriculture. The diverse and comprehensive themes addressed in the conference reflect a meticulous and relevant exploration of the current context surrounding organic and natural farming. Each theme, ranging from "Organic Farming for Sustainable Agriculture" to "Market and Value Chain Development" is thoughtfully deliberated, underscoring the importance of sustainable agricultural practices in the contemporary landscape. The conference provides a platform for in-depth discussions on these critical themes, fostering comprehensive understanding of the challenges and opportunities in promoting organic and natural farming in the present agricultural scenario.

I heartily extend my greeting and warm welcome to all the guests, delegates and participants of the event. I wish this event to be a great success.

(Arvind Kumar Shukla)

इंदिरा गांधी कृषि विश्वविद्यालय

कृषक नगर, रायपुर - 492 012 (छत्तीसगढ़) भारत

INDIRA GANDHI KRISHI VISHWAVIDYALAYA

KRISHAK NAGAR, RAIPUR - 492 012 (CHHATTISGARH) INDIA

+91-771-2443419 (o)
+91-771-2442302 (F)
vcigkv@gmail.com

डॉ. गिरीश चंदेल
कुलपति
Dr. Girish Chandel
Vice Chancellor

No. PA/VC/188/24/246
Date 23/1/2024

MESSAGE

It is with great pleasure that I extend my warmest greetings to all the esteemed participants of the **National Conference on "Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches**". This conference holds significant promise as we explore natural farming for sustainable agricultural practices. Natural farming is a method grounded in cultivating harmony with nature and avoiding the use of chemicals and synthetic products is anticipated to foster the natural symbiosis of soil micro flora and crop plants. This approach is poised to minimize or eliminate adverse effects on soil health and the environment thereby offering a sustainable and ecologically conscious alternative to conventional farming.

In Chhattisgarh tribal population by default practice sustainable agricultural practices with minimal or no use of chemicals. Consciously or unconsciousiy tribal communities have established a harmonious equilibrium between their environment and necessities. They refrain from excessively extracting resources from nature or the forest even in the face of occasional scarcity. They consistently avoid overexploiting the abundant forest resources showcasing their commitment to sustainable agricultural practices.

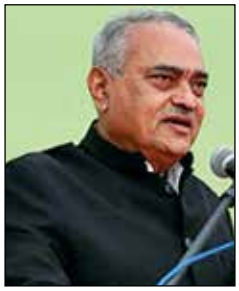
As we explore the diverse subthemes, I am optimistic that the conference will provide ample opportunities for delegates to acquire new knowledge and insights. i encourage each participant to engage actively, learn and apply the gained knowledge in their respective workplaces, fostering a positive impact on the future of agriculture.

I extend my best wishes to the organizers for their commendable efforts in bringing together this insightful and impactful academic gathering.

23.1.24

(Girish Chandel)

FOREWORD



Our nation has gone through the various stages of agricultural development in last seven decades. From severe food shortage at early 50's to the present food surplus nation. The role of any stakeholder can't be undermined. Organic farming has emerged as an alternative system of farming that not only addresses quality and sustainability concerns, but also ensures a better future particularly for small holders with increasing cost and awareness about the safety and quality of food, improving health issues, the long term sustainability of the ecosystem, climate change and increasing global warming. Natural farming is agroecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity. Natural farming is an attempt to develop a method of farming which could help to reverse the degenerative momentum of modern agriculture.

Organic Farming advocates several specific technical issues and natural farming involves several distinguished aspects and formulations. Hence, it is wise to debate with the experts, researchers, policy makers, farmers, students, practitioners, entrepreneurs and traders on common feasible way-out so that extension personnel and field functionaries implementing Organic and Natural Farming in their areas can convince the farmers for quick adoption and reap the benefits inherent in suggested farming systems.

Hence, I am delighted as the National Conference on "Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches" at Jabalpur during January 28-30, 2024 under the aegis of International Society of Extension Education, Nagpur in collaboration with ICAR-ATARI, Jabalpur, JNKVV, Jabalpur, MANGE, Hyderabad, RCONF, Nagpur and PRDIS, Hyderabad is going to be a platform to express the ideas, approaches and innovations to upscale Organic and Natural Farming.

I have a firm belief that the conference will help in the development of the suitable extension strategies and approaches for the speedy promotion and adoption of Organic and Natural Farming for the benefit of the farming community.

Dated: 22.01.2024

Place: Bangalore

Dr. K. Narayan Gowda
President, INSEE, Nagpur
& Former Vice- Chancellor,
UAS (B)

PREFACE

Agriculture has been practiced for thousands of years without the use of chemicals. Chemical fertilizers were first developed during the mid-19th century. The new agricultural technologies, while beneficial in the short term in increasing productivity and to solve the food problems in India and other developing countries, had serious long-term impacts such as soil compaction, erosion, soil health and decline in soil fertility, environmental pollution, climate change along with health concerns due to toxic chemicals entering the food chain. Growing demand for food has polluted much of the world's water, soil and air with excess use of fertilisers and chemical sprays, which are remarkably inefficient. This mammoth task can be accomplished with judicious application of practices of organic and natural farming based on ecological principles.

Organic farming has emerged as an alternative system of farming that not only address quality and sustainability concerns, but also ensures a better future particularly for small holders with increasing awareness about the safety and quality of food, the long-term sustainability of the ecosystem, climate change and increasing global warming. Further, natural farming is a traditional form of agricultural practice popularly associated with a back-to-nature movement. It is an attempt to develop a method of farming which could help to reverse the degenerative momentum of modem agriculture. In natural farming, the focus is on the use of bio-inputs prepared from farm and local ecosystems instead of purchasing those from outside making maximum possible use of natural resources, thereby avoiding the use of chemicals liable to kill or reduce the activity of beneficial soil organisms and avoiding direct feeding of land with soluble minerals.

It is an appropriate time for Extension Education team to take a comprehensive view on the issue of organic farming and natural farming– the opportunities from the point of view of consumers and the resultant market potential, processing, export, the challenges of feeding the billions. Against this backdrop, the Conference aims to discuss the role of extension programs in increasing farm productivity and income, boosting food production, enhancing food safety assurance, and enabling surplus food produced to be exported to other countries. The conference seeks to bring together agricultural extension scientists, researchers, policy makers, academicians, professionals, farmers, traders, students' scholars and other stakeholders for a purposeful dialogue to get deeper insights into the current dynamics and for drawing a future roadmap for agricultural extension vis-à-vis promoting organic and natural farming.

Thus, it is expected that the Conference will meet the interest and needs of a wide range of disciplines and actors. High quality deliberations in thematic and plenary sessions are expected to enlighten and empower the Extension professionals to drive an inclusive development paradigm for organic farming worldwide.

Organizing Team

CONTENTS

THEME 1

Organic Framing for Sustainable Agriculture

ROLE OF EXTENSION ADVISORY SERVICES IN PROMOTING ORGANIC FARMING

Anjali Sharma[1*], Neha Kushwaha[2] and Shubham Ahirwar[3]

[1, 3]Ph. D. Scholar, Department of Horticulture, [2]Ph. D. Scholar, Department of Extension Education
Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.)
**Corresponding author:* ravendrasharma197515@gmail.com

The role of agriculture extension services in the promotion of organic farming is a critical factor in the sustainable development of agriculture. Extension services are instrumental in the dissemination of knowledge and technical expertise to farmers, facilitating their shift from conventional to organic practices. These services offer training, guidance on organic pest and disease control, and aid in the intricate process of obtaining organic certification. Moreover, extension agent as bridges between organic farmers and markets, enhancing the economic viability of organic agriculture. In addition to technical support, extension services foster a sense of community among organic farmers, enabling the exchange of experiences and best practices. They also contribute to research and innovation by connecting farmers with latest advancements in organic farming techniques. The role of extension services in promoting organic farming extends far beyond the dissemination of information; it encompasses training, certification guidance, market connections, and community building. As a catalyst for the growth of the organic agriculture sector, extension services play a crucial role in driving sustainable and environmentally responsible food production practices. Organic farming contributes significantly to environmental stewardship by minimize the ecological footprint of agriculture. Extension services promote these ecological benefits by educating farmers about sustainable soil management, reduced chemical reliance, and conservation of natural resources.

ENHANCING AGRICULTURAL SUSTAINABILITY THROUGH CAPACITY BUILDING OF FARMERS

Upasna Digarse

Ph.D. Scholar, Department of Extension Education, Jawaharlal Nehru Krishi Vishwavidyalaya, , Jabalpur
Corresponding author: upasnadigarse4@gmail.com

Agriculture is a cornerstone of global food security and economic growth, with millions of smallholder farmers accounting for a large percentage of food production. Nonetheless, there are many obstacles that farmers throughout the world must overcome, such as changing market conditions, restricted access to resources, and climate change. Enhancing farmers' knowledge, skills, and capabilities through various interventions and tactics is the goal of capacity building. With the help of this comprehensive strategy, farmers can increase production, make well-informed decisions, use sustainable agricultural methods, and develop their ability to withstand adversity. Farmers may minimize their environmental impact, maximize resource utilization, and diversify their revenue streams by combining formal and informal education, training programmes, and resource access. Extension services, workshops, and farmer training programmes offer essential information on contemporary agricultural methods, managing pests and diseases, and sustainable farming practices. The goals of these programmes are to raise agricultural product quality and production. It is crucial to provide farmers with current knowledge and access to agricultural technologies.

This includes data on market trends, weather predictions, and digital farm management tools. Facilitating farmers' access to markets and value chains is essential to their financial stability. Initiatives to increase capacity may involve instruction in quality control, post-harvest management, and market negotiating. Soil conservation, water management, and agroecology are advocated as sustainable agricultural practices to preserve the land's long-term health and production. Farmers' financial resilience may be improved by providing them with financial management skills, credit, and awareness of savings and investment possibilities. Farmers' capacity building is a dynamic and continuing process that may be adjusted to local settings, needs, and resources. It has the potential to improve food security, poverty reduction, and environmental sustainability if effectively applied. It also enables farmers to adapt to a changing world while retaining traditional knowledge and practices. As agricultural systems develop, farmer capacity building remains an important instrument for ensuring a more egalitarian, resilient, and sustainable future for both farmers and society as a whole.

ROLE OF EXTENSION IN PROMOTING ORGANIC FARMING

Amrit Warshini [1*] and R. K. Doharey [2]

[1*] Ph. D Scholar and [2]Professor, Deptt. of Extension Education, A.N.D.U.A.T, Kumar Ganj, Ayodhya

**Corresponding author: amritwarshini1996@gmail.com*

Organic farming has gained significant momentum in recent years, driven by growing environmental concerns and a demand for healthier, sustainable food production systems. Extension services act as a bridge between agricultural research and farmers, providing essential information, training, and support to transition from conventional to organic agriculture. The key functions of extension services, such as disseminating knowledge on organic farming techniques, pest and disease management, soil health improvement, and certification processes and also there is huge impact of extension in increasing farmer awareness and adoption of organic practices, resulting in improved soil fertility, reduced chemical inputs, and enhanced sustainability. The critical need for continued investment in extension services to foster the growth of organic farming and achieve sustainable agricultural development, extension can promote organic farming by training and education, field demonstrations, farmer-to-farmer learning, market linkages, Policy advocacy. The Government of India is promoting organic farming through the National Project on Organic Farming, which provides financial assistance to farmers for conversion and development of organic farming systems. The Participatory Guarantee System for India is a more affordable and accessible certification option for small-scale organic farmers.

ICT can help organic farmers in India by providing access to information, improving efficiency, facilitating communication, developing precision agriculture technologies, supply chains and connecting them to markets. India's ICT-enabled National Organic Farming Mission is using mobile apps, e-learning platforms, precision agriculture, and e-commerce to boost organic production. The Government of India has launched a number of ICT initiatives to support organic farmers, such as the National Organic Farming Mission, e-Krishi portal, and Farm Information System. ICT can play a significant role in the development and growth of the organic farming sector in India.

ROLE OF ORGANIC FARMING FOR ACHIEVING SUSTAINABILITY IN AGRICULTURE

Rishikesh Tiwari * and Abhishek Sharma

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.) Pin-482004

**Corresponding author: rktiwari0761@gmail.com*

Agriculture and farming have a long history. Agriculture is the main economic structure for many developed and developing countries. The modern agricultural practices affect the environment namely nutrient cycle, soil erosion, carbon sequestration, and many other ecological patterns. Organic farming is influential practice to minimize the environmental and ecological impact of sustainable development. Usage of more organic matters in agricultural practices can reduce the adverse effects on the environment by keep saving its natural cycles on recovery process and organic farming may enhance the food quality too. The organic farming may largely exclude the usage of chemical fertilizers, pesticides, growth hormones and feed additives of livestock activities. A combination of organic farming and new technologies is of utmost importance to reduce the limitations and challenges of organic farming. The innovative methods and new approaches making new trends toward sustainability farming system and enhances the agricultural productivity, and quality of life of many farmers in an environmentally friendly way. In other words, organic farming mirrors the sustainability concepts of Global Agriculture. Healthy soil is the foundation upon which sustainable agriculture is built. Farming practices differ mainly based on soil inputs and crop protection measures. In conventional chemical farming practice, indiscriminate use of chemical fertilizers and pesticides destroy the beneficial soil micro flora change the soil nature and also contribute to the high crop production cost. The essence of natural farming is to minimize the external inputs to the farm land, and nurture the soil fertility. Mulching can maximizes the moisture content in the soil, forms the cover for the earthworms and minimizes the weed propagation. This paper reviews the concepts of natural farming in the context of its eco-friendly nature and sustainability.

CHALLENGES AND OPPORTUNITIES IN ORGANIC FARMING

Vikash Kumar Sonkar [1*], Sanjay Kumar[2] and R.C. Meena[1]

[1] Research Scholar and [2]Professor

Department of Horticulture, SAST, Babasaheb Bhimrao Ambedkar University, Lucknow,

**Corresponding author:* vikashlbslbs@gmail.com

In addition to being a viable and sustainable choice for adaptation to climate change and variability, organic farming also holds potential for mitigation. In many climate zones and under a wide range of particular local conditions, the careful management of nutrients and carbon sequestration in soils play a crucial role in adaptation and mitigation to climate change and variability. Organic farming is a sustainable agricultural method that focuses on the health of the land, ecosystem, animals, and people. Produce grown organically is safe, rich in nutrients, and devoid of chemical residues. Conversely, chemical-based farming negatively impacts the ecosystem, animal and human health, and the soil. One strategy for maintaining and enhancing soil fertility is organic farming. The long-term stability of the output rate is dependent upon the health of the soil. As a result, it will assist farmers in doubling their output while using an appropriate agricultural scheme. If certified organic produce is in high demand and commands higher prices than regular commodities, producer farmers

will profit more. In order to ensure that there are no chemical residues in the production system, a three-year transition period is typically needed before receiving certification for organic farming. In organic farming, two types of certification systems are used: the Third-Party Certification system and the Participatory Guarantee System (PGS). Most of Assam's land is automatically classified as organic due to the state's minimal or non-existent usage of chemicals and fertilisers during the agricultural process, when compared to other modern states.

EVALUATION OF ORGANIC MULCH AND DIFFERENT NUTRIENT SOURCES ON PRODUCTIVITY AND PROFITABILITY OF RICE - POTATO CROPPING SYSTEM

Vikash Singh[1*], D.S. Sasode[2], S.P. Singh[3] and Rajendra Patel[4]

[1]ICAR - Directorate of Weed Research, Jabalpur-482004, Madhya Pradesh, India

[2]Rajmata Vijayaraje Scindia KrishiVishwa Vidyalaya, Gwalior-474002, Madhya Pradesh, India

[3]ICAR - Central Potato Research Institute - RS, Gwalior-474020, Madhya Pradesh, India

[4]KVK, Govindnagar, Narmadapuram-461990, Madhya Pradesh, India

**Corresponding author: vikashsingh5695@gmail.com*

Several ill effects in soil and human health as well as environmental hazards were noted due to the use of imbalance of nutrient application. Nutrient management is necessary to balance the soil nutrient input with the crop requirement. Therefore, the field experiment was conducted during the *kharif* and *rabi* seasons of 2020-21 and 2021-22 at Research Farm of ICAR-CPRI-RS, Gwalior, to examine the interactive effects of organic mulch and different nutrient sources on productivity and profitability of rice - potato cropping system. The experiment was conducted in randomized block design with three replications. The treatment combination consisted of two factors such as mulch (No mulch and paddy straw mulch @5 t/ha) and different sources of nutrients (100% RDF, Compost @25 t/ha + *Azotobacter* @1.25 l/ha + PSB @1.25 l/ha + Jeevamrut @500 l/ha, FYM @25 t/ha + Jeevamrut @500 l/ha and control). Results of two year pooled data revealed that, application of paddy straw as mulch @5 t/ha significantly resulted in the highest grain (2.73 t/ha) and straw (5.52 t/ha) yield of rice, tuber and haulm yield of potato (23.48 t/ha and 10.38 t/ha, respectively) and net return (2,54,975 Rs/ha). Among various nutrient sources, application of 100% RDF significantly recorded the highest grain yield of rice (3.81 t/ha), tuber and haulm yield of potato (26.43 t/ha and 12.55 t/ha, respectively) as well as improved the system productivity as compared to all other treatments but maximum net return (2,76,630 Rs/ha) was obtained under FYM @25 t/ha + Jeevamrut @500 l/ha.

IMPLEMENTING ORGANIC FARMING PRACTICES BY REDUCING BARRIERS AMONG FARMERS: SOME STRATEGIC RECOMMENDATIONS

Chandrika Sharma*, Seema Naberia, Ajay Raut and Sonam Agrawal

Department of Extension Education, College of Agriculture, J.N.K.V.V. Jabalpur

**Corresponding author: chandrikasharma1991@gmail.com*

India has witnessed a growing interest in organic farming in recent years, driven be a desire for sustainable agricultural practices and healthier food production. Several aspects characterize the relationship between India and organic farming. The current study has been the part of doctoral research conducted in Jabalpur district of Madhya Pradesh with the aim to identify major impediments encountered by the farmers in practicing organic farming with strategic recommendations on their part to encounter them. Within the spectrum of six primary categories of impediments namely, production, situational, economic, marketing & communicational, extension & technical and socio-personal impediments; socio-personal impediments emerged as the foremost challenges confronted by farmers in the pursuit of organic farming, followed by extension and technical challenges, production constraints, situational obstacles, marketing and communicational impediments and economic impediments with the lowest rank on the criteria of mean score and rank value. The recommendations provided by farmers were arranged by frequency and percentage, highlighted the priority areas. The paramount suggestions given by the majority of farmers included provision of Minimum Support Price, alternative market development for organic produce, timely and simplified certification process, ensured accessibility of quality organic manure at reasonable prices, government's supportive role in marketing, subsidies, and loans during the transition period and the need for skilled and experienced organic farming experts to guide new entrants. Also the farmers stressed upon importance of conducting awareness programs for both producers and consumers, establishing networks of organic farmers for the exchange of ideas, technology, inputs, and experiences, promoting Public-Private Partnership and contract farming for organic cultivation. Additionally, fostering collaboration among farmers, policymakers and researchers can create a supportive ecosystem for the successful implementation of organic farming practices, promoting sustainable agriculture and environmental well-being.

ORGANIC FARMING AMONG SMALL-SCALE FARMERS: OPPORTUNITIES AND CHALLENGES

Vikash Kumar Meena

PhD. Scholar, Rajasthan College of Agriculture (MPUAT), Udaipur 313 001

Corresponding author: vmmeena543@gmail.com

Producing enough food to meet the needs of a growing population has always been the greatest concern of food policy-makers around the world. Given the increasing attention to organic farming (OF), the study was conducted to investigate the main opportunities and challenges of the food production system of small-scale farmers in developing countries with an emphasis on their livelihoods. The study showed that the most significant advantages of OF are environmental protection and a higher resilience to environmental changes, increasing farmers' income and

reducing external input cost, enhancing social capacity and increasing employment opportunities. As well as enhancing food security primarily by increasing the food purchasing power of local people. However, the main challenges of this food production system include lower yields in comparison to conventional systems, difficulties with soil nutrient management, certification and market barriers, and the educational and research needs of small-holders. The paper concludes that even though of might present some significant challenges to small-scale farmers, it could/should still be considered as a part of the solution and means of improving their livelihoods.

NATURAL, ORGANIC PESTICIDES ALLOWED IN ORGANIC FARMING

Sahab Singh Pippal[1*], Prince Mahore[2] and Hirdesh Kumar [3]

[1&2] Department of Entomology, College of Agriculture, RVSKVV, Gwalior (M.P.)

[3]Department of Horticulture, College of Agriculture, RVSKVV, Gwalior (M.P.)

**Corresponding authors: pippalsahabsingh@gmail.com*

It may come as a surprise, but contrary to popular belief, organic farming does make use of pesticides! However, these organic farming pesticides are not human made. Additionally, they are subject to the highest standards prescribed by regulatory bodies, such as the International Organization for Standardization (ISO), United States Department of Agriculture's National Organic Program (USDA-NOP), National Organic Standards Board (NOSB), IFOAM Organics International, etc. The primary source of organic farming pesticides determines whether the input is acceptable in organic farming or otherwise. According to the EU Council Regulation, the pesticide used in organic farming should be of plant, animal, microbial or mineral origin except where products or substances from such sources are not available in sufficient quantities or qualities.

In simpler words, the chemicals used in organic pesticides must be naturally occurring and synthesized as a result of organic processes in the ecosystem balance.However, toxins that are naturally occurring, such as arsenic or strychnine, do not implicitly make it to the list of approved organic pesticides for agriculture. Additionally, genetically engineered or modified products are also discouraged in organic farming.

Even though organic pesticides have natural, organic origins, it does not mean that they do not contain any toxicity. Hence, while they are safer than their synthetic counterparts, the concentration of organic pesticides for agriculture also plays a crucial role in determining its detrimental effect on human health. Organic pesticides are naturally more beneficial for the environment. Given their natural origins, they are eco-friendlier than the water-soluble, synthetic pesticides that percolate into the water table and cause water pollution. However, it is worth mentioning here that certain types of organic pesticides are found to be less effective, which causes farmers to overuse them, which may lead to upsetting the balance of the ecosystem.

ORGANIC FARMING IN MADHYA PRADESH: A VISION TOWARD A HEALTHY STATE

S.S. Gautam* and Alka Singh

Krishi Vigyan Kendra Sidhi (M.P.)

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.) INDIA.

**Corresponding author: kvksidhi.2008@rediffmail.com*

Food quality and safety are the two important factors that have increasing attention in farmers and urban consumers. Conventionally grown crops have adverse impact on human health due to presence of higher pesticide reduces, excess amount of nitrate, heavy metal, and antibiotic reduces, they also generally modified organism. Conventionally grown food are less nutritious and amount of antioxidant. Organically grown foods has increased during last 10 years due to their probable health benefits and foods safety concern. Organic foods production has defined as cultivation without the application of chemical fertilizer and systematic pesticides. The popularity of organically grown food is increased day by day owing to nutritional health benefits. Organic farming also protect environment and has a greater socio-economic impact on state of Madhya Pradesh. Madhya Pradesh is a state that is bestowed with indigenous skills and for growth in organic agriculture. Although Madhya Pradesh was far behind in the adaption of Organic farming due to several reason, presently it has achieved rapid growth in Organic agriculture and now became one of the largest Organic producers in the country. Therefore, Organic farming has a great impact on the health of human by insuring sustainable development in field of agriculture. Cow based rural economy is going to prove helpful in accelerating the expansion of natural/organic farming in the state as mission mode. There are many districts, villages, block and gram panchayat areas in the state which are using at least 50 to 60% less external inputs like chemical fertilizers, agrochemical etc.

INTEGRATED FRAMING SYSTEM DOUBLE ONE'S INCOME

Alka Singh* and S.S. Gautam

JNKVV, Krishi Vigyan Kendra Sidhi (M.P.)

**Corresponding author: alkasingh80@gmail.com*

Organic farming is not a new term but it is a traditional way of farming in India. India is a nation where farming is done in maximum states and a large number of people are working in this sector. Due to various reasons, farmers have utilized various types of fertilizers and inorganic substances in the crops to increase the production of the crops which is extremely dangerous for the people. This is a case study of Smt. Sarita Shukla, a progressive women farmer of Manikesar village of Sidhi District, not only practices integrated farming systems (IFS) but also organic farming coupled with intercropping in the cropping component of IFS. Under the IFS, she has practices Crop + Hi-tech Horticulture + Dairy + Vermicomposting + Biogas +Bee keeping. She has four acres land, divided her land as 0.5 acre under livestock, vermicompost & biogas, 0.5 acre under fodder & bee keeping, 1.5 acre under crop production and 1.5 acre under Hi-tech horticulture. The total input cost of IFS unit was Rs. 225000/- per year and net income was Rs. 450000/- per year. Overall she found management of land holding in such a way that output and by product of some unit used as input for other unit. The IFS system not only reduces the cost of production but also provide higher & regular income round the year. However, lack of training facilities, high market price fluctuations, lack of credit

facilities and high input costs were found to be the major constraints in adoption of farming systems by small and marginal farmers.

ASSESSMENT OF NATURAL FARMING PRACTICES IN SOYBEAN (GLYCINE MAX MERRIL.) UNDER NIMAR VALLEY MADHYA PRADESH

R.K. Singh[1*], G.S. Kulmi[2], Sanjeev Verma[3], V.K. Mittoliya[4] and Santosh Patel[5]

RVSKVK – Krishi Vigyan Kendra, Khargone (M.P.), India

**Corresponding author: rajiv.k_singh@yahoo.co.in*

Soybean (*Glycine max* Merril.) is a magnificence and very important oilseed crop of Madhya Pradesh. It is grown on 75800 ha covering 18.19 % area of total cultivated area with 69.43 mt production and 1744 kg ha^{-1} productivity of soybean in Khargone district. On Farm Trails were conducted during Kharif 2022-23 at seven farmer's field in Kakoda village of Khargone (M.P.) to assess the performance of conventional (T_1) and natural farming systems (T_2) of soybean (var. RVS 2001-4) under nimar valley zone of Madhya Pradesh. Recommended practices of T_2 were Beejamrit (50 g kg^{-1} seed), Ghanjeevamrit (250 kg ha^{-1}), Jeevamrit, Amrit pani (500 l ha^{-1}), Neemastra, Brahmastra, Dashparni ark (25 l ha^{-1}), Sonthashtra (12 l ha^{-1}), Khatti Chhachh (6 l ha^{-1}) and Mulching (5 t ha^{-1}) applied in natural farming system. All recommended practices were applied in T_1 conventional farming. Results of seven On Farm Trails showed that natural farming practices had 7.55 % (17.2 q ha^{-1}) lower seed yield over conventional farming (18.5 ha^{-1}) of soybean. Similarly, 7.55 % (Rs. 73960 ha^{-1}) lower average gross return was obtained as compared to conventional farming (Rs. 79550 ha^{-1}) while only 1.61 % (55260 ha^{-1}) lower average net return was recorded under natural farming practices as compared to conventional farming (Rs. 56150 ha^{-1}). However, 25.13 % (Rs. 4700 ha^{-1}) reduction in cost of cultivation was achieved with natural farming (Rs.18700 ha^{-1}) over conventional farming (Rs. 23400 ha^{-1}), which resulted in 16.51 % higher benefit-cost ratio (3.95 B:C ratio) under natural farming systems as compared to conventional farming (3.39 B:C ratio) of soybean. Farmers were convinced and having no reluctant views and can adopted natural systems easily in soybean crop in Nimar zone of Madhya Pradesh. However, many constraints have been experienced at farmers level like unavailability of inputs, complexity in preparation of inputs, no proper market of the produce and no policy of minimum support price is available for the natural farming products.

ORGANIC FARMING: CHALLENGES AND OPPORTUNITIES

Preeti Mishra[*]

Block Technical Coordinator (Organic Farming)

National rural economic transformation project (NRLM), Block Beohari, Shahdol (MP)

**Corresponding author: preetimishraplantphysiology90@gmail.com*

An agricultural production method known as "organic farming" uses natural methods rather than chemical fertilizers and pesticides. The objective of organic farming is to establish a sustainable system that safeguards the health of farmers and consumers, protects the environment, and yields nutritious crops. Crop rotation, composting, and natural pest management are a few of the soil-quality-preserving and -improving methods used in organic agricultural practices. In addition to

reducing the consumption of non-renewable resources like fossil fuels, these actions also support biodiversity. When practicing organic farming, farmers must overcome numerous obstacles. Among these are the primary barriers, which include the high cost of organic inputs, the requirement for certification, the lack of a market for organic products, low yield, and low price. In addition, there is a slight demand for organic goods, the hassle of employing organic farming methods, a greater production risk, and a lack of consolidated land that is appropriate for organic farming. In comparison to conventional production, it requires more labor. On the one hand, organic food is more expensive due to the higher labor costs. In India, organic farming is still not able to take center stage in the agricultural industry. In addition to lowering the caliber of organic food products, these issues could have a detrimental impact on the agricultural sector at the commercial, and infrastructure as well as policy levels may hinder the growth of organic farming. More significantly, these problems must be resolved in order to protect the farming industry's financial stability. The widespread use of chemicals and pesticides to control weeds and insect pests has led to the evolution of weed and pest species, which is one of the main problems. This is the main obstacle in the process of switching from conventional to organic farming. Strong market forces that regulate the flow of inputs and outputs, including intellectual property, will always be present in the larger context in which organic agriculture operates. Organic growers and traders face an uncertain future due to the close interaction between consumer preferences and social expectations regarding agricultural production systems and the market place. Keeping these challenges in mind policy frameworks needs to align on these challenges with exploitation of opportunities of organic farming in favour of farmers and consumers lined up with sustainable developed goals.

THE EFFECTS OF ORGANIC FOOD ON HUMAN HEALTH

Hirdesh Kumar[1]* and Rashmi Bajpai[2]

[1]Ph D Scholar, Department of Horticulture, College of Agriculture, RVSKVV, Gwalior (M.P.)

[2]Sr. Scientist Krishi Vigyan Kendra, RVSKVV, Gwalior (M.P)

**Corresponding authors: hirdeshkumar468@yahoo.com*

The effects of organic food on human health are significant. Organic farming can be defined as an agricultural process that utilizes organic fertilizers and pest control derived from plant waste. Organic farming originated as a response to the environmental damage caused by the use of chemical pesticides and synthetic fertilizers. In other words, organic farming is a new system of agriculture that restores, maintains and enhances ecological balance.

Economic Benefits: Organic farming does not require expensive fertilizers, pesticides or high-yield variety (HYV) seeds for crop cultivation, resulting in no additional costs. Good Returns on Investment: Farmers can earn substantial returns on investment by utilizing affordable and local inputs. There is a substantial demand for organic products in India and worldwide, leading to increased income through exports.

Compared to products treated with chemicals and fertilizers, organic products are more nutritious, flavorful and beneficial for health. Organic cultivation is free from chemicals and fertilizers, minimizing harm to the environment.

Organic farming is an agricultural system that employs organic fertilizers such as manure, green manure, vermicompost, bone meal and crop rotation. The main principles of organic farming include minimal use of off-farm inputs, prohibition of synthetic chemicals (fertilizers, pesticides, drugs),

limited use of organic fertilizers and natural pesticides, adoption of long crop cycles, maintenance of soil organic matter and microbial life, prohibition of genetically modified plants for animal husbandry, adherence to organic regulations related to welfare, use of organic feed, and limitation of medical treatments (especially antibiotics and hormones).

ORGANIC MANURE'S IMPACT ON PLANT HEALTH

Hirdesh Kumar[1*] and Rashmi Bajpai[2]

[1]Department of Horticulture, College of Agriculture, RVSKVV, Gwalior (M.P.)

[2]Krishi Vigyan Kendra (RVSKVV) Gwalior- 474002 (M.P)

**Corresponding author: hirdeshkumar468@yahoo.com*

Organic manure significantly influences plant health and global recognition of organic farming practices stems from their manifold environmental and health advantages. The pivotal role of organic manure in augmenting soil fertility and fostering sustainable agriculture underscores its importance. The intersection of climate change and chemical fertilizers presents potential challenges to crop production, necessitating an examination of crop growth parameters and yield response to temperature variability in environments employing high-dose chemical fertilizers.

Effective soil nutrient management is crucial for preserving soil quality and ensuring sustained productivity in nursery systems. The investigation focused on assessing the impacts of organic manure and chemical fertilizer treatments on growth performance, as well as soil and tissue chemical properties.

A comprehensive understanding of the interplay between crop yield and soil quality in response to the sequence of organic fertilizer applications is imperative. Notably, researchers have underscored the significance of organic fertilizers in plant growth. The constituents of the medium, soil, soil-soluble substances, and moisture preservatives play integral roles in influencing plant growth. Physical soil amendment through organic matter addition significantly affects the chemical and biological properties of soil, enhancing cohesion in light sandy soils and disintegration in clayey soils, while providing essential oxygen.

Factors such as water-holding capacity, respiration rate in roots, and microbial activity in the soil are impacted by these amendments. Organic media contain various major and minor nutrients, as well as rare elements, serving as a supply source for essential nutrients for plants and microorganisms. Beyond improving soil porosity, controlling the movement of water and air is essential for soil development, contributing to gas diffusion and increased water-holding capacity.

The incorporation of organic compounds works to reduce Cation Exchange Capacity (CEC) of positive ions and regulate soil pH, fixing nutrients and preventing sedimentation in the soil. The availability of nutrients, particularly microelements, increases due to the slow decomposition of organic matter, ensuring a sustained nutrient supply to plants over an extended period. A healthy plant resulting from these practices exhibits increased resistance to insects and diseases, thereby mitigating their impact on plant health.

CONSTRAINTS FACED BY FARMERS IN PRACTICING ORGANIC FARMING IN DEWAS DISTRICT

Neerja Patel*, Mahender Singh, Savita Kumari and A. K. Badaya

RVSKVV- Krishi Vigyan Kendra, Dewas (M.P)

**Corresponding author: neerja.patel1988@gmail.com*

Organic agriculture is a unique production management system which promotes and improves agro-ecosystem health, including biodiversity and soil biological activity, this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs. But, due to intensive agriculture, using high yielding and hybrids varieties more chemicals, fertilizers and irrigation to increase yields was introduced. As the main focus being to increase production and quality of product was ignored. As a result, biological diversity is lost, soil productivity is diminished, water resources are overused and polluted and climate changes have occurred and environmental problems reached on top in global context. The present study was conducted in Khategaon block of Dewas district purposively because this block having maximum area under organic farming as compared to other blocks. Five villages were selected from this block namely Harangaon, Dulwa, Nemawar, Guradiya and Barwai. From each selected villages 15 farmers were selected, a list of farmers who were practicing the organic farming was prepared by using purposive sampling method. Thus, the total sample size was 75 organic farmers for further study. Pre- tested schedule was used to collect relevant information from the farmers. In this study the possible constraints faced by the organic farmers which hinder the extent of adoption of organic farming practices were grouped into five major categories viz., economic, infrastructural, technological, environmental and marketing related constraints. The major constraints faced by them were economic and marketing including initial yield loss, initial low price for the organic produce, lack of minimum support prices for organic products, lack of specialized markets for organic produce and lack of reliable market information, regulation and distribution channels. Lack of indigenous certification agencies and training institutions were some infrastructural constraints face by them. Inadequate availability or shortage of quality disease free seeds/planting materials, lack of standard package of practices for practising organic farming were also the major technological constrains faced by farmers.

AN APPROACH TO ORGANIC FISH FARMING FOR SUSTAINABLE AQUACULTURE SYSTEM

Yogesh Chandra Rikhari[1]*, Satendra Yadav[2], Puneet Kumar[3] and Mukesh Kumar Bhargava[3]

[1]Senior Technical Officer (Fisheries), Krishi Vigyan Kendra Shivpuri, [2]Scientist (Fisheries) KVK Dindori, [3]Senior Scientist, KVK Shivpuri (M.P.)

**Corresponding author: rikhari@gmail.com*

Organic fish farming emphasizes environment sustainable, quality and chemical free fish production system, by which we can develop an alternative to resolve the environmental constraints by restricting the introduction of inorganic substances that can adversely affected the aquatic ecosystem. But, the transformation from commercially developed aquaculture system to organic aquaculture system is not an easy task because some issues have to be confirmed for setting up standards for the seed, feed, medicines, soil and water that plays an important role in production. However, converting to organic fish farming brings a wide change not only in environmental

conditions but also affects the yields which are significantly lower than production of modern fish farming system which can affect the global food security by reduction its contribution. To meet out this demand of fish for increasing population, capture fisheries can be adopted, which assures increase in fish production, by remaining stable. In this modern fisheries era, fish farming will face various environmental challenges but, organic fish farming will support to overcome these challenges by sustaining the ecosystem of farming. Besides, organic fish farming alone would be a multidimensional, complex and expensive farming system. So instead of adoption of organic farming alone it is suggested to adopt integrated approach with organic farming that will give better returns in term of monetary and production. On other side organic fish farming can also help in improving the ecosystem, soil condition and biological activities to develop sustainable farming system and better quality of yield.

PERCEPTIONS OF CONVENTIONAL INTEGRATED FARMING SYSTEM FARMERS TOWARDS ADOPTION OF ORGANIC FARMING: A CASE STUDY FROM JABALPUR

Hari R[1*]., D. Upadhyay[2], R K Patel[1], P. Prajapati[3] and M. Swamy[4]

[1]Assistant Professor, Department of VAHEE, CVSc & AH., Jabalpur, [2]Senior Research Fellow, FFP, NDVSU, Jabalpur, [3]PhD Scholar, Department of VAHEE, CVSc & AH., Jabalpur, [4]Director Extension Education, NDVSU, Jabalpur

**Corresponding author: hariptr84@gmail.com*

A survey was conducted to analyze the perceptions of 120 smallholder farmers practicing conventional integrated rice-wheat-cattle farming in Jabalpur towards adopting organic farming practices. The findings revealed hesitancy among farmers to transition to organic methods. Only 11.66% of respondents expressed willingness to adopt organic crop farming given assistance, insurance for production loss, and access to premium markets. Key barriers were fears of yield reduction and lack of price incentives beyond minimum support price. Approximately 75.83% believed organic practices increase production costs. All respondents felt organic certification processes are cumbersome and costly. Ambiguity around organic market channels was a concern for 89.16%. However, 77.5% showed interest in adopting organic cattle rearing given proper information and facilitation, which completely lacked as per all respondents. The disparity in intentions reflects that crops are mainly grown for commercial sale, while milk is for household use. Profitability fears thus dominate crop decisions. The study highlights that smallholder integrated farmers are apprehensive about adopting organic cropping due to uncertainties over yields, profits, and markets. Targeted interventions in extension, insurance, supply chains, and certification can help address these concerns and encourage wider adoption of organic farming. The findings emphasize the need for localized strategies to enable safe transition pathways for smallholders motivated by sustainability rather than solely commercial aims. Further research should explore business models and policy frameworks tailored to the needs of subsistence-based integrated agricultural systems prevalent across India.

HARNESSING THE POWER OF ORGANIC FARMING: A SUSTAINABLE PATH FOR CLIMATE CHANGE ADAPTATION AND MITIGATION

Archana Singh*, Parvez Rajan and Sapna Singh

Department of Extension Education, College of Agriculture, JNKVV, Jabalpur (M.P.)

**Corresponding author: singh7archana@gmail.com*

In the face of escalating climate change challenges, organic farming emerges as a promising strategy for both adaptation and mitigation. Its multifaceted approach, encompassing practices such as crop rotation, cover cropping, and nutrient management, enhances soil health and resilience to extreme weather events. Moreover, organic farming significantly reduces greenhouse gas emissions by minimizing reliance on synthetic fertilizers and pesticides, offering a promising avenue for addressing the challenges posed by climate change. Organic farming prioritizes soil health through practices like crop rotation and cover cropping. Enhanced soil structure and water retention mitigate the effects of extreme weather events, promoting resilience in the face of climate uncertainties. Organic farming minimizes reliance on synthetic fertilizers and pesticides, reducing the carbon footprint associated with their production and application. The use of natural alternatives promotes a more sustainable and environmentally friendly agricultural system. Organic soils act as carbon sinks, sequestering carbon dioxide from the atmosphere. The promotion of agroecological approaches aids in the long-term storage of carbon, contributing to climate change mitigation. Organic farming practices support biodiversity by avoiding the use of chemical inputs harmful to ecosystems. Diverse crop rotations and intercropping enhance ecosystem services, fostering a balanced and resilient agricultural landscape. Organic farming often involves local and community-based approaches, promoting economic resilience in the face of climate-related disruptions. Sustainable farming practices contribute to food security and reduce vulnerability to climate-induced agricultural shocks. Organic farming stands as a multifaceted solution to climate change, providing adaptive strategies for agriculture while actively mitigating environmental impacts. As global challenges intensify, embracing and promoting organic farming practices becomes imperative for building a sustainable and climate-resilient future.

TRANSITIONING TO ORGANIC FARMING: ADDRESSING KNOWLEDGE GAPS AND PROMOTING SUSTAINABLE PRACTICES

Archana Singh* and Parvez Rajan

Department of Extension Education, College of Agriculture, JNKVV, Jabalpur (M.P.)

**Corresponding author: singh7archana@gmail.com*

Organic farming has deep roots, reflecting a shift away from chemical and fertilizer-based agriculture towards a more sustainable system. Despite this shift, challenges arise as our farmers and extension officers lack competence in diverse organic technologies and practices. The decision to embrace organic farming is propelled by a range of factors. Economic considerations play a pivotal role, as farmers recognize the potential for sustainable and profitable agricultural practices. Additionally, socio-economic and structural factors contribute to the shift, reflecting a broader

movement towards environmentally conscious and resilient farming systems. Beyond economic motivations, socio-psychological factors play a crucial role in the adoption of organic farming. Awareness, knowledge, subjective norms, cultural ethics, attitudes, and sustainability orientation all influence the decision-making process. These factors collectively shape the mindset of farmers and contribute to the broader acceptance of organic practices. A significant challenge in the transition to organic farming is the existing knowledge and skill gap among farmers and extension officers. To promote a scientific rationale for the adoption of organic farming, targeted efforts are required to narrow down these gaps. Training programs, workshops, and accessible resources can empower agricultural stakeholders with the necessary skills and knowledge to navigate the nuances of organic farming. Certification plays a crucial role in establishing trust throughout the organic farming ecosystem. Ensuring the quality of organic products is paramount for fostering confidence among producers, sellers, and consumers. Rigorous certification processes create a transparent and accountable framework, reinforcing the credibility of organic farming practices. Through a concerted effort to bridge these gaps, we can usher in a new era of agricultural practices that are not only economically viable but also environmentally and socially responsible.

EVALUATION OF ECO-FRIENDLY, BIO-INTENSIVE PEST MANAGEMENT MODULES AGAINST MAJOR INSECT PESTS AND DISEASES OF SESAME

A. K. Pandey*, A. K. Vishwakarma, Rajani Bisen, Surabhi Jain, K. N. Gupta and Roshani Sahu

Project Co-ordinating Unit Sesame and Niger, College of Agriculture, JNKVV, Jabalpur, Madhya Pradesh

**Corresponding author: pandeyjnkvv@gmail.com*

Sesame (*Sesamum indicum* L.) is one of the most important crop grown mainly for its seeds that contain approximately 48-52% oil and 25% protein. Its production is challenged by insect pests and disease infestations. Farmers generally focusing the use of synthetic pesticides that may lead to contamination of seed with pesticides residues, environmental and health hazards, besides risking export embargo. To meet the growing demand in domestic as well as in international market, there is an urgent need to address an important matter of concern i.e., pesticide free sesame seed. Therefore, the present investigation was conducted to evaluate the ecological engineering methods against major insect pests and diseases of sesame. The experiment was designed with eight treatments including farmer's practices and control. Out of six bio intensive treatments, T_6 (RDF (N) 75% through vermicompost +25% through neem cake + seed treatment with *Pseudomonas fluorescens* @ 10 g/kg of seed + furrow application of enriched *P. fluorescens* (2.5 kg *P. fluorescens* + 100kg vermicompost) @ 250 kg/ha + release of *T. chilonis* 5 cc eggs /ha, (six times) at 10 days intervals + border crop with maize + installation of one sticky trap/plot + foliar spray of *Bacillus thuringiensis* var. kurstaki @ 1.0 kg/ha at 30 and 45 das) recorded significantly lower population of leaf webber and capsule borer (0.33 larvae/plant), leafhopper (0.30 leafhopper/three leaves/plant) and diseases, sesame phyllody (0.42%) and root rot (2.32%), higher population of lady bird beetle (1.0/plant) and spider (0.36/plant) and highest seed yield (917 kg/ha). Treatment T_5 (RDF (N) 75% through FYM + 25% through neem cake + seed treatment with *Trichoderma Sp* @ 10 g/kg of seed + furrow application of enriched *Trichoderma Sp* (2.5 kg *Trichoderma sp* + 100 kg vermicompost) @ 250 kg/ha + release of *T. chilonis* 5 cc egg /ha, (six times) at 10 days intervals +border crop with maize + installation of one sticky trap/plot +foliar spray of *B. thuringiensis* var. kurstaki @ 1.0 kg/ha at 30

and 45 das) was the next better treatment in respect to record the lowest population of insect pests, percent plant, flower and capsule damage, higher seed yield and BC ratio.

BIOLOGICAL MANAGEMENT OF ROOT & STEM ROT (MACROPHOMINA PHASEOLINA) DISEASE OF SESAME

K. N. Gupta*, A. K. Vishwakarma, Rajani Bisen, A. K. Panday, Surabhi Jain and Roshani Sahu

Project Coordinated Unit, All India Coordinated Research Project on Sesame and Niger (ICAR);
JNKVV Campus, College of Agriculture, Jabalpur-482004 (M.P.) India;
**Corresponding author:* kngupta1@rediffmail.com

Sesame (*Sesamum indicum* L.) is an ancient oilseed crop. It plays an important role in the oilseed economy throughout the world. In India it is grown in 14.81 lakh hectare area with production 7.49 lakh tones and productivity 502 kg/hectare during 2022-23. The low productivity is attributed to poor crop management and exposure of the crop to a number of biotic and abiotic stresses. Sesame phyllody is the most destructive disease and second important diseases is *Macromophomina phaseolina* causing root& stem rot of sesame. A field experiment was conducted at Project coordinated unit, Sesame and Niger field under Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur, during *Kharif* 2021 & 2022 to find out the effect of *Trichoderma harzianum*, *Pseudomonas fluorescence* and botanicals on incidence of root & stem rot disease in sesame. The susceptible cultivar (VRI-1) was employed for this purpose. The experiment comprised of 7 treatments *viz.* T_1: Seed treatment with *T. harzianum* @ 10g/kg of seed – furrow application of enriched *T. harzianum* (2.5 kg *T. harzianum* + 100 kg vermicompost) @ 250 kg/ha followed by spray of *T. harzianum* @ 5g/l at seedling, flowering and capsule stage. T_2 : Seed treatment with *P. fluorescens* @ 10 g/kg of seed – furrow application of enriched *P. fluorescens* (2.5 kg *P. fluorescens* + 100 kg vermicompost) @ 250 kg/ha followed by spray of *P. fluorescens* @ 5g/l. at seedling, flowering and capsule stage$T_{3:}$ Seed treatment with *T. harzianum* @ 10 g/kg of seed – furrow application of enriched *Trichoderma harzianum* (2.5 kg *Trichoderma harzianum* + 100 kg vermicompost) @ 250 kg/ha followed by spray of *Nembicidine* @ 5ml/l at seedling, flowering and spray of sulphur @ 2gm/l. at capsule stage. T_4: Seed treatment with *P. fluorescens* @ 10 g/kg of seed – furrow application of enriched *P. fluorescens* (2.5 kg *P. fluorescens* + 100 kg vermicompost) @ 250 kg/ha followed by spray of nimbecidin @ 5ml/l at seedling, flowering and spray of sulphur@ 2gm/l. at capsule stage. T_5: Seed treatment with carbendazim @ 3g/kg – spray of (Tebuconazole 50% + trifloxystrobin 25%) at 0.5g/l at 45 and 60 days after sowing. (treated check). T_6: Seed treatment with carbendazim @ 3g/kg – spray of (Carbendazim 12 % + Mancozeb 63 % 75WP %) at 2g/l at 45 and 60 days after sowing (treated check). T7: Untreated check. Two years data conclude that, All the treatments were found to be superior over control. Among the treatments, T4: Seed treatment with *Pseudomonas fluorescens* @ 10 g/kg of seed – furrow application of enriched Pseudomonas fluorescens (2.5 kg *Pseudomonas fluorescens* + 100 kg vermicompost) @ 250 kg/ha followed by spray of nimbecidin @ 5ml/l at seedling, flowering and spray of sulphur @ 2gm/l. at capsule stage. which recorded root rot disease incidence (14.70%) with yield of 605 kg/ha. While control recorded the maximum root rot disease incidence (25 %) with minimum yields of 160 kg/ha.

ORGANIC FARMING FOR SUSTAINABLE AGRICULTURE IN INDIA

Sanjeev Sharma*, Namrata Dwivedi, Bharat Bansal and Shubham Bhadoriya

Department of Genetics and Plant Breeding and Plant Molecular Biology and Biotechnology, RVSKVV, Gwalior

**Corresponding author: s.sanjeev.sharma745@gmail.com*

In the post-independence era, India faced a severe challenge of producing sufficient food stuff for its hungry, growing population which was mitigated with the introduction, development and use of high-yielding varieties integrated with infusion of irrigation water facilities, fertilizers, and pesticides. This unique combination of high-yielding production technology has helped the country in achieving a food surplus through green revolution but with reaching a stagnant plateau in production along with creating serious concerns about soil health, environmental pollution, pesticide toxicity, and sustainability of agricultural production. Scientists and policy planners are, therefore forced to seriously reassess the current agricultural practices shifting their focus entirely upon Organic farming which relies more on employing biological inputs rather than heavy usage of chemical fertilizers and pesticides for providing quality food without adversely affecting the soil's health and the environment. Certified organic food products and Non-edible organic products include garments, cosmetics, functional food products, body care products, herbal medicines, and their value-added products are now produced in India however, the concern is whether large-scale organic farming will produce enough food for India's large population. Thus, a natural balance needs to be maintained for the existence of life and prosperity. The production of these organic crops and products is to be reviewed with regard to sustainable agriculture in India to stabilize organic agricultural production and to increase it further in sustainable manner without diminishing the return of falling dividends.

ORGANIC FARMING

Harshita Laxkar

Ph.D. Scholar, Department of Agricultural Economics & Farm Management,

Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur, M.P.

Corresponding author: laxkarharshi@gmail.com

Organic farm production and trade has emerged as an important sector in India seen as an important strategy of facilitating sustainable development. Organic produce is being seen as a natural choice by consumers, and consequently by producers, in both international and domestic markets. The growing health concerns and increasing non-tariff barriers like Sanitary and Phyto Sanitary (SPS) measures in the international market (Naik, 2001). Efficient marketing, promotion of organic products requires government interventions. It should be an integrated approach of government agencies, non- government organisations, private players and the farmer community.

AWARENESS, KNOWLEDGE AND PERCEPTION OF FARMERS TOWARDS NATURAL FARMING IN UJJAIN DISTRICT OF MADHYA PRADESH

Hansraj Jatav*, Dilip Kumar Jatav, D. K. Suryawanshi, R. P. Sharma and D. S. Tomar

RVSKVV, Krishi Vigyan Kendra, Ujjain (M.P.)

**Corresponding author: raj.hans14@gmail.com*

Natural Farming or Zero Budget Natural Farming (ZBNF) has become a pivot point of discussion among the agricultural scientists, government, farmers, and several other informal groups engaged in agriculture. This is mainly due to the reason that there are two diametrically opposite schools of thought on this topic co-existing in the country. Some scientists straightaway discard the philosophy of Natural Farming. On the other hand, its proponents are claiming the method to be a panacea for all problems causing distress in Indian agriculture, especially for smallholders. In agriculture, natural farming is recent trend. But, in India natural farming method is not new and very long back our ancients were practiced this natural method of agriculture. Natural method of agriculture is an expeditious growing economic sector and makes an important contribution to the health of human, economic health soil health and planet health. Natural farming is somewhat different from chemical-based farming. Simply, natural farming is the method of cultivation of crops and rearing of livestock in natural ways. Natural farming is things required for cultivation are raised and generated within the land not from outside. In natural farming process, land formation procedure, soil suitability, organic manure preparation, Nemastra preparation, ingredients used for jeevamritha and agniastra, crop rotation, intercrop, harvesting process, etc., Farmers are facing difficulties not only in production aspects but also in marketing aspects too. In marketing organic products, certification for marketing products, available marketing channels, market potentials etc., are the main marketing problems. The farmers those who are having good awareness level in the above stated aspects, they are successful in their farming activities. So, it is assumed that there would be a relationship between the awareness level of farmers on natural farming.

In the present scenario, natural farming has become an alternative and attractive activity among the farmers. It is due to profitability, environmental protection, health consciousness etc. Accordingly, it is found that products like wheat, chickpea, pea, potato, fruits and vegetables etc., are important organic products in the study area. These products are cultivated by the natural farming practicing farmers with aim of increase their standard of living. It is hope that living standard of the natural farming practicing farmers and numbers of farmers are growing organic products may be increased by the way of increasing the awareness level of the natural farming cultivation in all aspects. By keeping this, the present study deals with the awareness, knowledge and perception level of the farmers on natural farming in Ujjain District of Madhya Pradesh. The findings also indicated that the most of the farmers having medium level of awareness on natural farming.

PROBLEMS AND PROSPECTS OF ORGANIC AGRICULTURAL PRODUCTS FOR NUTRITIONAL & HEALTH SECURITY

Vijaya Khader

Former Dean, Acharya N.G. Ranga Agricultural University

**Corresponding author: vijayakhader@gmail.com*

Food security means all people at all times have both the physical and economic access to adequate supplies of good-quality and safe food needed for a healthy and active life. In spite of increase in production of food grains, fruit and vegetables malnutrition in children stunting (36.1%), wasting (19.3%), anemia (67.1%) and obesity (3.4%) is persisting. Global Challenges such as biodiversity loss, pollution, land and environmental degradation, water scarcity, population growth, poverty, food insecurity, malnutrition and climate change. Inter cropping, Integrated crop management, Modern Agriculture diversify production &achieve sustainable food security.

India produced around 2.9 million MT (2022-23) of certified organic products which includes all varieties of food products namely Oil Seeds, fibre, Sugar cane, Cereals & Millets, Cotton, Pulses, Aromatic & Medicinal Plants, Tea, Coffee, Fruits, Spices, Dry Fruits, Vegetables, Processed foods etc. Among different states Madhya Pradesh is the largest producer followed by Maharashtra, Rajasthan, Karnataka, and Odisha. In terms of commodities, Fiber crops are the single largest category followed by Oil Seeds, Sugar crops, Cereals and Millets, Medicinal/ Herbal and Aromatic plants, Spices & Condiments, Fresh Fruit Vegetable, Pulses. The total volume of export during 2022-23 was 312800.51 MT. The organic food export realization was around INR 5525.18 Crore (708.33 million USD). Organic products are exported to USA, European Union, Canada, Great Britain, Switzerland, Turkey, Australia, Ecuador, Korea Republic, Vietnam, Japan, etc.

Organic products reduce public health risks to farm workers, their families, and consumers by minimizing their exposure to toxic and persistent chemicals on the farm and in food, the soil in which they work and play, the air they breathe, and the water they drink. Organic foods have been shown to have lower levels of toxic metabolites, including heavy metals such as cadmium, and synthetic fertilizer and pesticide residues. Consumption of organic foods may also reduce exposure to antibiotic-resistant bacteria.To date, there are no long-term clinical trials measuring direct health outcomes from organic diet intervention. The short timeframe of currently available clinical trials is a serious limitation in assessing demonstrable health benefits. Additionally, only surrogate markers of health have been applied to the majority of clinical trials, with most trials measuring antioxidant levels or pesticide metabolite excretion. Foods produced by organic methods are usually believed to have a better taste and a better balance of vitamins and minerals than conventionally grown crops. However, evidence from many greenhouse and field experiments with different crops do not always support this point of view.

Work carried at Professor Jayasenkara Telangana State agricultural university, Centre for sustainable Agriculture, Uday Aqua connects and Deccan Development society reveal Organic farmers rely on crop rotation, green manures, compost, biological pest control, and mechanical cultivation to maintain soil productivity. in India, organic farming practice is less than 2 percent since Government, Agricultural Universities and Research Institutes are not prepared to support organic agriculture in whole heartedly. Most of developed countries and few developing countries are returning to harmless Organic Agriculture practice during the last 15 years.In recent years lot of focus is given to organic cultivation based on the health benefits. Needs further research mainly on the nutrient composition of various crops and also bioavailability of the nutrients from organic produce.

KNOWLEDGE AND ADOPTION LEVEL OF FARMERS REGARDING ORGANIC FARMING PRACTICES IN RAISEN DISTRICT OF MADHYA PRADESH

Swapnil Dubey*, P. K. Dwivedi and Ranjeet Singh Ragav

Krishi Vigyan Kendra, Raisen (M.P.)

**Corresponding author: swapnildubey45@yahoo.com*

Organic farming system in India is not new but being followed from ancient time. It is a method of farming system which primarily aimed at cultivating the land and raising crops such a way, as to keep the Soil alive and in good health by use of organic and biological materials along with beneficial microbes to release nutrients to crops for increased sustainable production in an ecofriendly pollution free environment. India occupies second position in terms of number of certified organic farmers (44,926). It is 13th in terms of area under total agriculture land. In M.P. farming is the major's source of self employment and livelihood of near about 80 percent of the population living in rural area. M.P. is endowed with tremendous improvement relating agricultural development from the innovator of green revolution time. The present study was conducted during the year 2018-19 at Sanchi block of Raisen district in Madhya Pradesh. The sample consisted of 120 organic farmers selected from two villages namely Hinotiya and Gundari through purposive sampling method. The result of the study revealed that maximum farmers had strongly favorable attitude about the practice of organic farming. It can be stated that majority of farmers (58.66 percent) had complete knowledge about different practices. Regarding field preparation mean score was 2.4, in case of organic manure like crop residues, FYM, vermicompost etc. had 2.32 mean score and in case of seed treatment mean score is 1.82. The main objective of the study to know the adoption level of organic farmers practices by the farmers. Majority of the farmers have medium (54 percent) adoption level organic farming practices followed by low level (28 percent) and high level (12 percent).

ALLELOPATHY FOR WEED CONTROL IN ORGANIC FARMING

Brajkishor Prajapati[1*], Mrigendra Singh[1], Alpana Sharma[1], Deepak Chouhan[1], Rishiraj Negi[2], Bhagwat Prasad Pandre[2] and Gurprit Singh Gandhi[3]

Scientist[1], Program Assistant[2], SMS[3]

KVK Shahdol (M.P.)

**Corresponding author: brajkishorprajapati1@gmail.com*

Organic agriculture is a production system that sustains health of soil, eco-system and people, by relying on ecological process, bio diversity and natural cycles and adapted to local conditions than use of inputs with adverse effects. Organic farming is practiced by at least 3.1 million farmers in 72.3 million hectares of farmland of 187 countries. Weeds are one of the most challenging problems facing organic agricultural production system all over the world. Weeds compete for light, nutrients, water, and space that reduces crop growth and yield. Additionally, weeds also harbor insect pests, bacterial, fungal and viral pathogens, further reducing the crop yield. With global population expected to reach over 9 billion by 2050, world food production cannot risk any significant yield loss due to weed competition. In field crops, loss caused due to weeds has wide range of 15-90 %, although it largely depends on the management strategies adopted. Of the total loss caused by various pests

in agriculture, weed account for 37 % followed by insects (29%) and diseases (22%). Allelopathy is a biological phenomenon of chemical interaction between plants, and this phenomenon has great potential to be used as an effective and environmentally friendly tool for weed management in field crops. In field crops, allelopathy can be applied through intercropping, crop rotation, cover crops, mulching and allelopathic water extracts to manage weeds. Intercropping cowpea with maize has shown to reduce the growth of jungle rice, purslane., jute mallow (*Chorchorusolitorius* L.) and Egyptian crowfoot grass (*Dactylocten iumae gyptium* (L.) Similarly, intercropping of sesame (*Sesamumindicum* L.), soybean and sorghum in cotton (*Gossypium hirsutum* L.) decreased the purple nutsedge density by 70%-96.Growing cover crop of rye, barley, wheat or sorghum to a height of 40-50 cm, followed by their desiccation and allowing the residues on the soil surface as crop residue has resulted in up to 95% control of several weed species for 30–60-day period. Crop residues made from wheat (*Triticuma estivum* L.), rice, sorghum, alfalafa (*Medicago sativa* L.), sunflower, and corn have shown evidence to suppress weed growth through allelopathy. The combined application of sorghum and sunflower water extract reduced the growth of horse purslane (*Trianthema portulacastrum* L.) by 66%. Allelopathic phenomenon can help to improve weed control in crops by harnessing the synergism to improve the efficacy of other weed control methods.

ORGANIC FARMING: AS A CLIMATE CHANGE ADAPTATION AND MITIGATION STRATEGY

Mrigendra Singh[1], Brajkishor Prajapati[1*], Alpana Sharma[1], Deepak Chouhan[1], Bhagwat Prasad Pandre[2], Rishiraj Negi[2] and Gurprit Singh Gandhi[3]

Scientist[1], Program Assistant[2], SMS[3]

KVK Shahdol (M.P.)

**Corresponding author: brajkishorprajapati1@gmail.com*

Climate change and its variability are emerging as the major challenges influencing the performance of Indian agriculture. The Indian agricultural production system faces the daunting task of having to feed 17.5 percent of the global population with only 2.4 per cent of land and 4 per cent of the water resources at its disposal. With the continuously degrading natural resource base compounded further by global warming and associated climate changes resulting in increased frequency and intensity of extreme weather events. According to Report of the Intergovernmental Panel on Climate Change (IPCC), green-house gas (GHG) emissions from the agricultural sector account for 10–12% or 5.1–6.1 Gt of the total anthropo-genic annual emissions of CO_2-equivalent. Climate change is likely to reduce irrigated rice yields in India by ~4% in 2020 (2010–2039), ~7% in 2050 (2040–2069) and by ~10% in 2080 (2070–2099) climate scenarios. Winter (Rabi) maize grain yield in India is projected to reduce with increase in temperature in Mid Indo-Gangetic Plains (MIGP), and Southern Plateau (SP). Spatio-temporal variations in projected changes in temperature and rainfall are likely to lead to differential impacts in different regions. The water requirement is estimated to increase by 10% for every 1°C rise in temperature. Under such situations, when oil palm yield decreases, small and marginal palm growers would be affected the most. Organic farming is frequently indicated to improve food insufficiency and undernourishment and help achieve sustainable food security. Organic farming can help reduce carbon emissions, enhance soil fertility and improve climate resilience. Organic farming is practiced by at least 3.1 million farmers in 72.3 million hectares of farmland of 187 countries. The reduction of greenhouse gas emissions for crop production and enhanced carbon sequestration makes organic agriculture a farming system

with many advantages and vast potential for mitigating and adapting to climate change. A fair comparison between organic farming and conventional farming of paddy rice clearly shows that the GHG emissions of organic paddy rice were substantially lower (40 %) than conventional production. Sustainable approach of organic farming enhances the agricultural productivity and quality of life of many farmers in an environmentally friendly way.

EFFECT OF USE OF DHATURA (DATURA STRAMONIUM) FOR CONTROLLING PESTS IN COTTON

Ashish Bobade* and D.K. Vani

Krishi Vigyan Kendra, Khandwa (M.P.)

**Corresponding author: kvk.khandwa@rvskvv.net*

Cotton, the white gold, is one of the most important commercial, cash and fibre crop of the India. Khandwa district is one of the leading cotton producing districts. Loss of yield in cotton production due to attack of various insects is a serious problem. Krishi Vigyan Kendra, Khandwa has conducted Front Line Demonstrations based on ITK (Indigenous Technical Knowledge) on farmers field for management of pests in cotton through Dhatura (*Datura stramonium*). These demonstrations were conducted in kharif season of the year 2020, 2021 and 2022 on 21 farmers' fields in the district. In the said ITK practice, about 300 g leaves and unripe fruits of Dhatura were crushed and boiled for five minutes in one litre water to get stock solution. About 300 ml of the stock solution is mixed in 15 litres water (one pump) for spray on the crop. About 7-8 pumps of the dilute solution is required to spray on one acre field of 3-4 months old cotton crop. The study findings revealed that ITK practice recorded mean yield 19.72 q per ha which was 12.87 percent higher than the yield obtained in farmer's practice. The ITK practice recorded average incidence of insect on cotton crop was 10.66 insect (Whitefly, Thrips, Aphid, Jassid etc.) per leaf that was 7.89 percent lower in comparison to incidence of insect in farmer's practice. The average B:C ratio was 3.37 in ITK practice as compared to 3.04 in farmers practice. Farmers were satisfied and obtained good yield by use of Dhatura for controlling pests in cotton. ITKs are valuable assets because these are environment friendly, sustainable and economical.

EVALUATION OF ORGANIC GLUTEN FREE MALTED MULTI MILLET BISCUIT

Rashmi Shukla, Y.K. Shukla and D.K. Vani*

Krishi Vigyan Kendra, Khandwa (M.P.)

**Corresponding author: kvk.khandwa@rvskvv.net*

Millets are highly nutritious, contains important amino acids and the products of millets provide a healthy alternative to malnutrition and lifestyle disease. With the objective to standardize and develop gluten free malted multi millet biscuit, different flour blends with finger millets, sorghum and pearl millet were tried and compared with wheat flour biscuit as control. The biscuit prepared by flour comprise of 50% finger millet flour, 25% sorghum flour and 25% pearl millet malted flour had higher sensory score. The sensorially acceptable flour blend was then further developed as gluten free malted multi millet biscuit in which partial replacement of flour with moringa dry leaf powder

at the substitution level of 0, 10, 15, 20, 25 and 30 percent was done. It was done to enhance the nutritive value of biscuit. The biscuit with 30% moringa dry leaf powder and 70% malted millet flour blend was found to be highly acceptable by the panelists and overall acceptability found in between 8.42 to 9.24 as judged by semi trained panel members. It was also found that malting had improved the chemical properties of the millets flour by increasing the mineral content as compared to non-malted millets. This gluten free malted multi millet biscuit could be beneficial to the growing health-conscious population and to Celiac patients.

ORGANIC FARMING OF JEERAPHOOL RICE: A WAY FORWARD FOR SUSTAINABLE PRODUCTIVITY

Sandeep Sharma*, C.P. Rahangdale, P.K. Lakra and S.C. Pankaj

Krishi Vigyan Kendra, Mainpat, Indira Gandhi Krishi Vishwavidyalaya, Raipur, C.G.

**Corresponding author: kvk.mainpat@igkv.ac.in*

Organic farming is rapidly gaining recognition worldwide as a promising means to offer healthy food and ensure environmental sustainability. Currently, organic products including organic scented rice are in huge demand owing to its potential to fetch premium prices in the global market. Jeeraphool is a local scented variety of Surguja region of Chhattisgarh and the farmers of this region cultivate this variety for their own use because of its taste and aroma. It's a small size variety sometimes give appearance of cumin (Jeera) hence known as Jeeraphool. The organic farming of Jeeraphool rice ensures its taste and aroma with higher productivity. Keeping above points in view an on-farm trial was conducted at farmer's field of Surguja district in Chhattisgarh during two consecutive years 2022-23 and 2023-24 to evaluate the impact of organic manure on production and productivity of Jeeraphool rice. During the study, two practices FP i.e., farmers practice (Use of imbalance manures and fertilizers) and RP i.e., recommended practice use of 1/3rd FYM + 1/3rd Vermicompost + 1/3rd green manuring + 10% Cow urine spray two times were evaluated. From the trial, it was observed recommended practice use of 1/3rd FYM + 1/3rd Vermicompost + 1/3rd green manuring + 10% Cow urine spray two times recorded higher average grain yield (33.03 q ha^{-1}) as compared to the farmers' practiced (22.20 q ha^{-1}). Among the yield components assessed, plant height, effective tillers per plant; filled grains per panicle and 1000 grain weight contributed more to the yield and are considered to be the most important factors responsible for yield gap difference. The average increases in yield by organic manuring over the farmers' practice were 48.91 percent. The average technology index was slight (13.03 percent). This gap might be due to various constraints such as soil fertility, availability of low moisture content, sowing time and climatic hazards etc. In economic point of views, the maximum B: C ratio of Rs. 2.91 was registered by recommended practice over the farmer's practice of Rs. 2.03. The higher yield and effective B:C ratio obtained under trials could be due to improved technology, non-monetary factors, timely operations of crop cultivation and scientific monitoring. This can be seen as a positive indicator for formulating and disseminating, more extensive, technology specific and farmer centric trials to improve knowledge and adoption amongst farmers in the district to boost Jeeraphool rice production.

TRENDS OF FARMER'S PERCEPTION IN RELATION TO NATURAL FARMING PRACTICES IN REWA DISTRICT OF M.P.

Sanjay Singh, Sandeep Kumar Sharma*, K. S. Baghel, M. K. Mishra and A.K. Pandey

JNKVV- Krishi Vigyan Kendra, CoA, Rewa (M.P.)

**Corresponding author: kumarsandeep912012@gmail*

The present study was carried out to assess farmers' perception and adoption of natural farming practices in Rewa district of M.P. with the specific objectives of assessing over all farmers' perception, the determinants of their adoption, constraints in practicing SPNF, cost of cultivation, yield and economics differences and suggestions for sustainable SPNF adoption. The study was based on extensive field survey and discussions/ interactions with beneficiaries and non-beneficiaries of Natural Farming Project across the Rewa district in Madhya Pradesh during 2022-23. About fifty natural farming practicing farmers from selected clusters identified randomly for the purpose. Simultaneously fifty conventional farmers /non beneficiaries of Natural Farming Project were also selected from the same villages for comparison, thus making the final sample size 100. The relevant data were collected by using well developed and pre tested schedule by personal interview method. The responses were scored, quantified, categorized and tabulated using mean, standard deviation, correlation coefficient, frequencies and percentages. Majority of the farmers viewed that, relative advantage over chemical farming (52.15%), feasibility of natural farming in present day farming situation (48.25%), enrichment in soil (43.33%), increase in microorganisms and earth worms in soil (42.5%), facilitation of natural enemies population (36.27%), quality production (35 %) and safe food product for family consumption (32.8%). However, the farmers expressed the difficulties regarding performing the natural farming practices (55.66%), purchasing and management of traditional cows is tedious (52.33) and weed management is also very difficult under natural farming (45.67%). Majority (73.33%) of the farmers were undecided about getting sustainable yields through natural farming. More than half of the famers disagreed that adoption of natural farming on large scale is possible (68.00%). The major constraints expressed were non availability of quality inputs, lack of information on preparation and use of products, intensive labour requirement, weed management and poor yields in initial years. Hence efforts are needed to facilitate the farmers with continuous support of different stakeholders through need based trainings on natural farming for enhancing its popularization.

ORGANIC FARMING: A TOOL FOR ENVIRONMENTAL MANAGEMENT STRATEGY

Sandeep Kumar Sharma*, Sanjay Singh, Rajesh Singh, K.S. Baghel, Akhilesh Kumar and A.K. Pandey

JNKVV- Krishi Vigyan Kendra, CoA, Rewa (M.P.)

**Corresponding author: kumarsandeep912012@gmail.com*

Organic farming has experienced remarkable growth in recent decades as community interest in environmental management. Research has shown that relative to conventional agriculture, organic farming is more efficient in its use of non-renewable energy, soil quality management of it exhibits sustainability in water quality and biodiversity. Research Studies have had more mixed findings, however, when assessing the impact of organic farming on greenhouse gas (GHG)

emissions and climate change. Life cycle assessments (LCAs) in particular have showed that organic farming has often exhibited in higher GHG emissions per unit product as a result of low yields. The organic movement has the opportunity to highlight the factors of LCA and utilize this information in developing tools for site-specific assessments that can indicate toward strategies for improvements. Mitigating effectively to the climate change crisis should be at the core of the organic movement's values. Societal-level behavioral and policy changes will be required to reduce waste and shift diets to achieve essential reductions in GHG emissions throughout food systems, organic farming should be open to carefully considering emerging technologies and strategies apart from that to improve its efficacy and reduce GHG emissions at the production stage.

ROLE OF ORGANIC FARMING IN CLIMATE CHANGE ADAPTATION AND MITIGATION STRATEGY

Sandeep Kumar Sharma*, Sanjay Singh, Rajesh Singh, A. K. Patel and A.K. Pandey

Krishi Vigyan Kendra, CoA, Rewa (M.P.)

**Corresponding author: kumarsandeep912012@gmail.com*

Organic farming, as an adaptation strategy to climate change and variability, is an ideal and sustainable option and has tremendous potential as a mitigation strategy. The judicious management of nutrients and carbon sequestration in soils are key factors in adaptation and mitigation to climate change and variability in different climate zones and under a wide range of specific local needs and conditions. Organic farming as a systematic approach for sustainable biological diversity and climate change adaptation through production management, reducing energy randomization of non-renewable resources; and carbon sequestration is a viable alternative. The aims of potential organic farming are therefore to attempt a gradual reversal of the effects of climate change for building resilience and sustainable productivity by addressing the key issues. Keeping the above factors in view comprehensive research is needed on yields and institutional environment for organic farming, as a mitigation and sequestration potential.

ROLE OF EXTENSION IN PROMOTING ORGANIC FARMING FOR RAGI CROP (FINGER MILLET)

Om Prakash*, Suresh Kumar Markam, Hitesh Kumar Mishra, Priya Sinha and Bindiya Painkra

Krishi Vigyan Kendra, Purvi Borgaon, Dist.- Kondagaon (C.G.)

**Corresponding author: kvkkondagaonigkv@gmail.com*

Finger millets (*Eleusine coracana*) commonly known as ragi, or in bastar region local name is Madua. It is an important millet crop of Chhattisgarh state suitable for cultivation in Bhata (sandy loam) soil. Finger Millet is shown both Rabi and Kharif season. Temperate and cool climate conditions are best suited for growth of ragi. Optimum sowing time of finger millet is from mid -June to mid-July for Kharif season and from mid -December to mid-January for Rabi season, depending upon the field condition. Early sowing helps the crop to escape attack of Blast in different regions. The crop requires low input and less affected by major pests and diseases and matures in 90-130 days. Organic farming might be due to greater availability and steady release of nutrients from combined organic manures, which perhaps enabled the plant to grow tall and produce superior growth

parameters. This is due to better translocation of photosynthates from source to sink and higher growth attributing characters like higher plant height, number of leaves and tiller production and its accumulation into different parts of plant and yield attributing characters like panicle length, test weight, panicle weight, no. of filled grains, number of unfilled grains per panicle in finger millets. In Kondagaon district the average millet crop productivity is 1896 kg/ha and state productivity is 1891 kg/ha those are higher as compared to national average 1662 kg/ha.

IMPORTANCE OF VERMICOMPOST IN SOIL HEALTH

Mayank Mehra*, K.S. Yadav, Mamta Singh, Vaishali Sharma and D.P. Singh

KrishiVigyan Kendra, Sagar, JNKVV Jabalpur (M.P.)

**Corresponding author: mayankvk90@gmail.com*

Vermicompost achieved by bio-composting and vermicomposting of farm, urban and agro-industrial waste with the help of earthworms. It is being increasing realized that composting is a surrounding environment friendly process, convert wide variety of wastes into valuable agricultural inputs which have good source of humus and plant nutrients, on application that improve soil biophysical properties and organic matter status of the soil. Recycling organic wastes through vermicomposting is being considered as an economically viable solution. Earthworms are considered as natural bioreactors while proliferate along with other microorganisms and provide required conditions for the biodegradation of wastes. Earthworm Improvement in the consistency of soil texture with a concomitant increase in porosity, infiltration and soil water retention are other characteristics of worm-worked soils that achieved with low-cost production of biofertilizers, environmental management of solid wastes and agricultural residues, enhanced soil productivity, tastier quality food, among others. Vermitechnology also aids in the reduction of soil salinity, soil erosion with less runoff and wasteland development. It is concluded that the organic wastes are effectively recycled by microorganisms followed by earthworms and plays a major role in the development of growth and yield of agricultural crops. The nutritive value of compost material is high and the composting process effectively converts the waste product into useful by-product.

ASSESSMENT OF NATURAL, ORGANIC AND CONVENTIONAL FARMING SYSTEMS IN MUNGBEAN (VIGNA RADIATA L.) UNDER NIMAR ZONE OF MADHYA PRADESH

G. S. Kulmi[1*], Sanjeev Verma[2], R. K. Singh[3], S. K. Badodiya[4], Yogendra Jain[5] and D. H. Ranade[6]

[1]Senior Scientist & Head (Agronomy), [2]Scientist (Soil Science), [3]Scientist (Extension Education), RVSKVV-KVK, Khargone (M.P.), [4]Principal Scientist & Head, KVK, Barwani (M.P.), [5]Associate Director Research, ZARS, Khargone (M.P.), [6]Dean, B.M. CoA, Khandwa (M.P.)

**Corresponding author: kvk.khargone@rvskvv.net*

Mungbean (*Vigna radiata* L.) is one of the most important legume crops grown on more than 6 m ha worldwide about 8.5 % of the global pulse area and on 1570 ha area along with 864 m t production and 550 kg ha^{-1} productivity in West Nimar district of Madhya Pradesh. Heavy pesticide and fertilizer consumption was observed in west nimar, resulting in emergence of several chronic diseases in human being and animals with poor soil organic carbon. Keeping in view, three-year

field demonstrations were conducted at instructional farm of Krishi Vigyan Kendra under crop cafeteria and technology park programme during 2020-21, 2021-22 and 2022-23 to assess the performance of Natural, Organic and Conventional farming systems in Mungbean variety "IPM 410-3" under Nimar Zone conditions. Recommended practices of seed treatment with Beejamrit (50 g kg^{-1} seed), Ghanjeevamrit (250 kg ha^{-1}) at sowing, Jeevamrit, Kunapjal, Amritpani (250 l ha^{-1}), Neemastra, Brhamastra, Dashparni ark (25 l ha^{-1}) at 30 and 60 DAS, Sonthastra (12 l ha^{-1}), Khatta Chhachh (6 l ha^{-1}) at occurrence of disease and mulching 3 t ha^{-1} after germination were applied in natural farming system and Beejamrit (50 g kg^{-1} seed), soil application of Rhizobium+PSB (each 5 kg ha^{-1}), Vermicompost (2 t ha^{-1}) at sowing, Vermi wash+gaumutra (1+1 l 10 l^{-1} of water) at 30 and 45 DAS, Neemashtra (25 l ha^{-1}) at 30 and 60 DAS, Neem oil (2.5 l ha^{-1}) at 20 and 40 DAS and Trichoderma harzinium (1 kg ha^{-1}) at disease occurrence were used in organic farming. All recommended practices were applied in conventional farming. The results of three-year field demonstrations reveal that 31.66% reduction (3.0 q ha^{-1}) and 21.25% reduction (2.19 q ha^{-1}) was obtained in seed yield with natural farming (9.48 q ha^{-1}) and organic farming (10.29 q ha^{-1}) as compared to conventional farming (12.48 q ha^{-1}) of mungbean. Similarly, 25.95% (Rs. 13549 ha^{1}) and 19.97% (Rs. 10950 ha^{-1}) reduction in net return was recorded under natural farming (Rs. 52201 ha^{-1}) and organic farming (Rs. 54806 ha^{-1}) respectively over conventional farming (Rs. 65756 ha^{-1}). Similar trend was observed in gross return under natural and organic farming systems over conventional farming. However, 50.64% (Rs. 7983 ha^{-1}) and 21.61% (Rs. 4720 ha^{-1}) lower cost of cultivation was realized under natural farming (Rs. 15763 ha) and organic farming (Rs. 19026 ha^{-1}) as compared to conventional farming (Rs. 23746 ha^{-1}) resulting in 12.35% and 2.91% higher benefit cost ratio with natural farming (4.31) and organic farming (3.88) over conventional farming (3.77) of mungbean. It can be concluded that natural farming proved more beneficial in terms of monetary gain per rupee investment than organic farming and conventional farming of mungbean. However, organic farming proved beneficial over conventional farming due to reduction in cost of cultivation.

MANAGEMENT OF ENVIRONMENT FRIENDLY PRACTICES OF VEGETABLE CROPS AMONG THE TRIBAL FARMERS OF NIMAR AND MALWA REGION, MADHYA PRADESH

Jagdish Morya[1], S.K. Badodiya [2*] and I. S. Tomar[3]

Scientist[1], Principal Scientist & Head[2] and Dean[3], RVSKVV, Gwalior M.P.

**Corresponding author: sbadodiya@gmail.com*

Vegetables are important for human health because of their vitamins, minerals, phytochemical compounds, and dietary fiber content. Especially antioxidant vitamins (vitamin A, vitamin C, and vitamin E) and dietary fibre content have important roles in human health. The tribes of Madhya Pradesh population constitute over 20% of the state population and are mainly concentrated in southern part of the state. The present investigation was conducted in Jhabua, Dhar, Alirajpur and Barwani district of Madhya Pradesh. The sample size for the study was 120 vegetable growing tribal farmers. In this study IPM practices like- Cultural Management, Mechanical Management, Biological Pest Control, Use of Bio-Pesticides, Weed Management Practices and INM practices like- Application of Organic Manure, Selection of Crops and Cropping Pattern, Intercultural Practices, Use of Natural Resources, Application of Bio-Fertilizers and Use of Inorganic Fertilizer were included. Majority of the respondents were in medium category regarding knowledge about environment-friendly management practices and majority 61.67 percent of the respondents belonged to medium

adoption category. Variables like education, annual income, irrigation availability, farm power & mechanism and innovativeness, social participation, size of land holding, socio-economic status and source of information were positively and significantly correlated with knowledge and adoption about environment-friendly management practices. Majority of the respondents suggested for making availability of pest resistant varieties (87.50%), followed by 75 per cent of respondents said organising training programmes on environment-friendly practices were major suggestion for minimizing the ill effects of agrochemicals.

MANAGEMENT OF ECO-FRIENDLY PRACTICES OF VEGETABLE CROPS AMONG THE TRIBAL FARMERS

R. S. Sikarwar[1], S.K. Badodiya[2*] and D. K. Vani[3]

[1]Research Associate, [2,3]Principal Scientist & Head

KVK Barwani, RVSKVV (M.P.)

**Corresponding author: sbadodiya@gmail.com*

The vegetables now become an essential requirement of the daily human diet, because of its nutritional value. The tribes of Madhya Pradesh population constitute over 20% of the state population and are mainly concentrated in southern part of the state. The present investigation was conducted in Barwani and Rajpur blocks of Barwani district, Madhya Pradesh. The sample size for the study was 120 vegetable growing tribal farmers. In this study IPM practices like- Cultural Management, Mechanical Management, Biological Pest Control, Use of Bio-Pesticides, Weed Management Practices and INM practices like- Application of Organic Manure, Selection of Crops and Cropping Pattern, Intercultural Practices, Use of Natural Resources, Application of Bio-Fertilizers and Use of Inorganic Fertilizer were included. Majority of the respondents were in medium category regarding knowledge about eco-friendly management practices and majority 61.67 percent of the respondents belonged to medium adoption category. Variables like education, annual income, irrigation availability, farm power & mechanism and innovativeness, social participation, size of land holding, socio-economic status and source of information were positively and significantly correlated with knowledge and adoption about eco-friendly management practices. Majority of the respondents suggested for making availability of pest resistant varieties (87.50%), followed by 75 per cent of respondents said organising training programmes on eco-friendly practices were major suggestion for minimizing the ill effects of agrochemicals.

EFFICACY OF TRAINING PROGRAMS AS PERCEIVED BY THE TRIBAL FARMERS WITH REGARDS TO ORGANIC FARMING PRACTICES IN BARWANI DISTRICT OF MADHYA PRADESH

S. K. Badodiya[1*], R. S. Sikarwar[2] and G. S. Kulmi[3]

[1]Pl. Scientist, [2]Research Associate and [3]Sr. Scientist

RVSKVV, KVK Barwani M.P.

**Corresponding author: sbadodiya@gmail.com*

Organic farming is one of the predominant approaches found to meet the objective of sustainable agriculture, which aims at maintaining agricultural growth rate to meet the demand for food of

all living things without draining the basic resources. Many techniques used in organic farming like inter-cropping, mulching and integration of crops and livestock are not alien to traditional agriculture practiced in India. Organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection. This study was conducted purposively in Barwani and Niwali blocks of Barwani district, West Nimar region on the basis maximum number of tribal farmers were perceived training of organic farming at KVK. The total 120 tribal farmers were selected for the study. Only 7.50 percent of the respondents had high perception in organic farming before participation of training and after the participation of training this figure is increased up to the 30.00 percent. All the selected attributes of the tribal farmers, except age, caste, cosmooliteness and size of family were found significant relationship with their perception of organic farming. Organic farming requires more labour input and difficult methods for preparation were major constraints experienced by the farmers. Market development for the organic products is a crucial factor to promote domestic sales.

USE OF DIFFERENT ORGANIC AMENDMENTS IN SUSTAINABLE AGRICULTURE

Rajendra Patel*, S. K. Garg, B.K. Namdev and D. D. Patel

Krishi Vigyan Kendra Govindnagar, Narmadapuram (M.P.), 461990

**Corresponding author: rajendrajhagari@gmail.com*

In recent years, there has been a growing recognition of the development of organic farming, and practitioners and techniques have been successfully integrated into a number of rural development initiatives. The use of organic inputs in place of conventional fertilizers, such as humic acid, vermicompost and biochar, is one of the key components of organic farming. Applying these inputs enhances the qualitative aspects of soil health in addition to safeguarding the environment. Therefore, it appears that applying organic fertilizers like humic acid and vermicompost could be a suitable substitute to increase both the qualitative and quantitative yield. Black carbon-rich biomass is heated to between 250 and 700^{0}C while supplying a restricted amount of oxygen to create biochar. Activated carbon, charcoal, and other black carbon compounds are not the same as biochar. The application of biochar in agricultural settings has demonstrated positive outcomes in terms of reducing soil acidity and mitigating pollution. Applying biochar results in lower greenhouse gas emissions and increased soil fertility because of its physico-chemical characteristics, which include enhanced porosity, alkalinity, and nutrient contents. Therefore, biochar is a crucial tool for sustainable agriculture due to its function in managing disease, abiotic stress, greenhouse gas emissions, soil fertility, and pollution remediation. Although the value of using compost in agriculture is widely acknowledged, this is not always the case, especially when guidelines and technical specifications for its usage are not provided by appropriate professional and institutional competence, as is frequently the case. The importance of adding a soil amendment is only one aspect of the use of compost in agriculture. The three conditions that agriculture must meet to be deemed sustainable are examined, and it is demonstrated that using compost can improve sustainability both inside the agricultural sector and in a broader sense.

IMPACT OF ORGANIC MANAGEMENT PRACTICES ON YIELD AND ECONOMICS OF SESAME

Surabhi Jain*, A. K. Vishwakarma, Namrata Jain, Rajani Bisen, A. K. Pandey, K. N. Gupta and Uma Bermaiya

Project Coordinating Unit (Sesame and Niger), JNKVV, Jabalpur, India

**Corresponding author: sur_812004@yahoo.co.in*

Sesame *(Sesamum indicum L.)* is an important oilseed crop and its seeds are rich source of protein, vitamins, minerals, and antioxidants. Higher usage of organic sesame seed in various food products, bakery products, animal feed products, cosmetics, and medicines are the prime growth drivers of organic sesame market in the world. However, low yields of organic sesame seed, high dependence on climatic conditions, and fluctuating market prices are the key constraints for organic sesame production. Keeping in view, an experiment was conducted in the field of AICRP on Sesame and Niger, JNKVV, Jabalpur during the year 2021-22 and 2022-23 to evaluate the effect of organic package of practices for export quality sesame. The experiment was conducted in RBD with 10 treatments and 3 replications. Treatments include application of FYM, Neemcake on nitrogen equivalent basis and its combination with foliar application of panchgavya, pseudomonas, Azotobactor and soil application of liquid biofertilizer PSB and Azospirillum and these treatments were compared with RDF. Observations were recorded on yield attributes and yield as influenced by various treatments. Pooled analysis of the data was carried out using OPSTAT software. Application of FYM on N equivalent basis + foliar application of 3% Panchgavya at flowering and capsule formation stage + foliar application of pseudomonas and azotobactor @2 l/ha both + soil application of pseudomonas and azotobactor @2.5 l/ha + 200 kg FYM (seed yield 517.78 kg/ha, test weight 3.69g, capsules/plant 42.13 and B:C ratio1.94) recorded the highest yield attributes and yield among all the organic treatment combinations and was at par with RDF; 50% N as basal and remaining 50% in 2 split doses (seed yield 553.50 kg/ha, test weight 3.84 g, capsules/plant 48.40 and B:C ratio 2.91). The results revealed that adoption of complete organic farming package can attain crop productivity of sesame at par with inorganic nutrient management.

CHALLENGES AND OPPORTUNITIES OF ORGANIC FARMING

Nandan Mehta* and Sonal Upadhyay

Department of Genetics and Plant Breeding, College of Agriculture, IGKV, Raipur (Chhattisgarh)

**Corresponding author: mehta.igkv@gmail.com*

Sustainability of Indian agriculture is hampered due to the ill effects of high yield production systems since green revolution. It increases the concern over national food security by creation of a plateau and also sometimes decrease in productivity of crops, poor soil health, resulting in reduced factor productivity and increasing production costs, leaving agriculture as an economically non-profitable enterprise. These problems currently are hampering the overall scenario of Indian Agriculture. These areas of doubt can be highly benefitted by the adoption of organic farming. In crops like pulses and *rabi* oilseeds, which are majorly grown in rainfed production system do not witness high use of chemical inputs. In such cases, organic farming may serve as a best option to enhance the sustainability of ecosystem. Results of several studies indicate that organic management practices are promising in arresting the decline in productivity through correction

of multi-nutrient deficiencies in soil. Organic production systems maintain and improve the soil health through stimulating the activity of soil micro-organisms and are also helpful in alleviating the increasing incidence or deficiency of secondary and micronutrients and are capable of sustaining crop productivity. Application of organic inputs in sufficient amounts for various purposes at regular intervals not only meet the requirements of crops but also result in higher crop yield with improved soil fertility and minimization of the incidence of insect-pests and diseases especially in pulses. The real potential of organic farming lies in growing pulses especially under rainfed condition. However, production of lower yield as compared to modern farming and the shift in mindset of yield oriented farmers are major challenges in the perspective of organic farming. Also, the marketing of organic produce in a mass appealing manner at remunerative prices is also a big obstacle which needs to be urgently addressed.

PINEAPPLE: A LOW-INPUT WITH HIGH QUALITY ORGANIC NUTRITIOUS FRUIT IN TRIBAL REGION UNDER DISTRICT CHHINDWARA, MADHYA PRADESH

R. K. Jhade[1*], D. C. Shrivastava[2] and Sarita Singh[3]

[1]Scientist (Horticulture), [2] I/c Sr. Scientist and Head, [3] Scientist (Agril. Ext.)
JNKVV, KVK, Chhindwara, Madhya Pradesh
**Corresponding author: jhaderk49@gmail.com*

The production of fruits and vegetables play an important role in generating employment, income and meeting household nutritional security as it provides 3-4 times more cash income than cereals per unit of land. Fruit crops play an important role in the economic development, nutritional security, employment generation and overall economic growth of many countries (Radha and Mathew, 2007). The Pineapple (*Ananas comosus*) belonging to the *Bromeliaceae* family is one of the most popular tropical fruit. It is popularly known for its excellent flavour, taste and shape of fruit. Pineapple is a good source of vitamins A, B and C, calcium, magnesium, potassium and iron. It is also a source of bromelin, a digestive enzyme. It is mainly used as dessert fruit and also in processing industry. Cultivation of pineapple in the tribal region is undoubtedly a very perspective venture with the region being an agrarian society with an average of 69 per cent tribal population, this will result in a breakthrough of social empowerment of the tribal people of the district Chhindwara. Pineapple cultivation helps in generating huge income of the growers and employment. A new fruit crop has been introduced by Krishi Vigyan Kendra with the successful production of pineapple in the tribal area of dist. Chhindwara. This is a low cost crop and it contains abundant nutrients. There are very few diseases and insects in it and the production method is also very easy. Pineapple has the potential to produce high production in very small areas and the market price remains the same for a short period of time. Tribal farmers can fulfill their dreams of doubling income by adopting this new alternate and innovative fruit *i.e* Pineapple.

SUSTAINABLE ORGANIC FARMING AND THE ROLE OF AGRICULTURE EXTENSION

Anupama Verma[1*] and P. Shrivastava[2]

[1]Assistant Professor (English) Institute of Agri-Business Management, JNKVV, Jabalpur (M.P)

[2]Assistant Professor (Agril. Extension) & Assistant Registrar- (Legal), JNKVV, Jabalpur (M.P)

**Corresponding author: anupamasv@yahoo.in*

Organic farming in India has existed for thousands of years and is deeply rooted in traditional farming practices. As per the International Federation of Organic Agriculture Movements (IFOAM), "organic farming" refers to farming methods that employ environmentally-friendly bio-fertilizers and insecticides that are mostly made from plant and animal waste along with organic manure. Sustainability has attracted global attention over the years, with organic farming being the flagship in agriculture production worldwide. Organic lifestyle is gradually becoming a fundamental concern in the present century. Organic farming aims to influence human health and our planet positively. Adopting organic farming is the core concern in avoiding chemical-based pesticides and fertilizers. According to the United Nations population projections of 2019, India's population will increase from 1.38 billion (138 crore) in 2020 to 1.5 billion (150 crore) in 2030 and 1.59 billion (159 crore) in 2040. Food demand in India is projected to grow between 2.5 percent and 3 percent per year. Past trends and future potential indicate that food output is likely to register a 3.5 percent growth rate in the next decade. These growth parameters indicate that India can afford to shift some areas from conventional methods of farming to organic or natural farming (ONF) without causing an imbalance between domestic demand and supply. Promotion of farmers groups, commodity groups, and women Self Help Groups for the production of organically good quality seeds and develop participatory seed production units. The farm and Family System approach can be promoted by integrating all activities of Agriculture and allied sector activities like Animal Husbandry, Horticulture, Fisheries, Sericulture, Forestry etc. so that they can prepare organic fertilizer from their crop waste, dung, poultry litter, sericulture, and forestry waste etc. Skill development training programs will be organized at the village level for the preparation of organic manures and organic pesticides. NPOF was implemented as a pilot project during the latter half of the 10th Plan subsuming "National Project on Use and Development of Bio-fertilizers" with its one national and six regional centers renamed as National Centre of Organic Farming (NCOF) and six Regional Centres of Organic Farming (RCOF).

INTEGRATING THE INDIGENOUS KNOWLEDGE OF NATIVE MANIPURI CATTLE FARMERS FOR SUSTAINABLE ORGANIC FARMING PRACTICES

Salam Prabex[1*] and Saidur Rahman[2]

[1]Division of Extension Education, Indian Veterinary Research Institute, Izatangar-243122, Uttar Pradesh

[2]Department of Veterinary and Animal Husbandry Extension Education

College of Veterinary Sciences and Animal Husbandry, CAU, Selesih, Aizawl, Mizoram 796014, India

**Corresponding author: prabexsalam99@gmail.com*

Organic livestock farming relies on a comprehensive strategy that incorporates ecological principles, animal care, and organic practices. The integration of the traditional knowledge

with modern organic farming principles contributes to the overall well-being of the animals, the environment, and the communities involved in livestock farming. The present study was conducted (2021-22) in four districts of Manipur State i.e. Imphal East, Imphal West, Bishnupur and Churachandpur to explore about the indigenous knowledge and practices being employed by the farmers to access the potential for integrating these practices into sustainable organic livestock farming. A total of 120 respondents rearing native Manipuri cattle were selected randomly from 20 villages in four districts. An ex post facto research design was used in the study, and the data was collected using a semi-structured interview schedule. Findings revealed that majority of the respondents are practicing more traditional way of rearing. Combination of both stall feeding and grazing using were practised as feeding method by majority of the farmers (75.00%). None of the respondent provided mineral mixture or feed supplements to their dairy animals. Natural method of breeding system was practised by all farmers. Control of ecto-parasite was done by utilizing naturally available conventional methods. Indigenous Technical Knowledge (ITK) is used for approximately 15.80% of the treatment's objectives. Majority (51.70%) of the respondents used cow dung as manure in their agriculture field. Indigenous knowledge can play a role in various ways, including aiding the discovery of locally viable and meaningful strategies for reducing poverty through cost-effective and sustainable means. Validating and sharing the knowledge and practices of the farmers is valuable, as it can contribute to the global sustainability of organic livestock farming.

NATURAL FARMING AS AN INSTRUMENT TO COMBAT CLIMATE VARIABILITY

U. K. Diwan*, D. Das, D. Unjan and I. Kumar

Krishi Vigyan Kendra Narayanpur (CG)

**Corresponding author: uttamdiwan@gmail.com*

Climate change in India as well as whole world has multiple impacts on global agriculture and farming community and has placed them in an even more vulnerable position. FAO estimates that the agricultural sector absorbs 22 % of the damage in developing countries after natural disaster. According to FAO, a total damage from cyclones from 2003-2013 in Asia was estimated to be around $70 billion, with crops and livestock being the hardest hit. The Indian Meteorological Department (IMD) reports an alarming 11% increase in the number of cyclones in the Arabian Sea and Bay of Bengal (BoB) over the past five years, with catastrophic implications for India's global warming.

There is ample evidence in the literature that farmers are attempting to diversify their farming systems and source of income to adapt to these changes. Farmers are changing agricultural practices and adapting to climate variability by shifting to crop diversity, moving to multiple cropping, changing land management techniques and using resistant varieties. climate-smart agricultural practices are more likely to be suggested to deal with climate catastrophes. It has been shown that changing certain agricultural practices can reduce anthropogenic greenhouse gas emissions.

Natural farming has emerged as an alternative, viable social moment that prioritizes socio-environmental resilience. Natural farming being an agroecology approaches is widely promoted in India. In many states of India like Himachal Pradesh, Andhra Pradesh there is large scale adaptation of natural farming by the farmers. The focus is on farming in harmony with nature by mimicking nature through the adoption of polyculture, cover cropping, and regenerative farming. Natural farming has holistic land management practices that harnesses the power of plant photosynthesis to close the carbon cycle and promote soil health, crop resilience, and nutrient diversity. Natural farming largely

depends on nine general principles that support "farming in harmony with nature". Each principle is interconnected. Eight of these nine principles promote natural farming, and the last says "no" to synthetic chemicals. The findings of the many studies clearly suggest that natural farming exhibits considerable potential to tolerate the effects of climatic variabilities when compared to chemical farming.

ORGANIC FARMING FOR SUSTAINABLE AGRICULTURE

Kartikey Pandey*, Uma Shankar, Pawan Choukshey and Bakeshwar Yadav

Department of Plant Pathology

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur

**Corresponding author: kartikeyp03@gmail.com*

Organic farming, a holistic and sustainable approach to agriculture, is pivotal in addressing environmental, social, and health concerns. Despite challenges, its benefits in creating a resilient food production system are evident, minimizing synthetic fertilizers and pesticides to mitigate pollution and safeguard biodiversity. Practices like crop rotation and agroforestry contribute to sustainable land use and conservation. The choice of organic farming is rooted in sustainability, health, and ethical considerations, emphasizing soil health through practices like crop rotation and composting, fostering nutrient-rich and fertile soils, and ensuring humane treatment of livestock. The increasing consumer demand for organic products, driven by health and environmental awareness, provides economic incentives for farmers. Globally, governments recognize the significance of promoting organic farming, implementing initiatives such as subsidies, research, and collaboration to support its adoption. The sustainable cycle of organic farming involves practices contributing to environmental health and the long-term fertility of the soil. Opportunities for farmers lie in premium prices, direct marketing channels, and diversification, while challenges encompass the economic transition period and labor-intensive pest management. Addressing these challenges is imperative for the broader success and widespread adoption of organic farming, contributing to a sustainable and ecologically sound agricultural future.

EFFECT OF SOWING METHODS, MANURE AND BIOFERTILIZERS ON YIELD OF FINGERMILLET (ELEUCINE CORACANA L.)

Swati Thakur Mirjha*, Angad Singh Rajput[1] and Panch Ram Mirjha[2]

*Subject Matter Specialist, [1]Senior Scientist & Head, Krishi Vigyan Kendra (IGKV), Bhatapara (Chhattisgarh)

[2]Assistant Professor (Agronomy), DKS CARS (IGKV), Bhatapara (Chhattisgarh)

**Corresponding author: thakur.swati16agron@gmail.com*

An experiment was conducted during *kharif* season of 2018-19 and 2019-20 to study the effect of sowing methods, organic manure and biofertilizers on yield attributes and yield of finger millet. Three different sowing methods with seed inoculation of bio-fertilizers and application of farm yard manure were disseminated through on farm testing at farmer's field in Bastar district of Chhattisgarh.

Transplanting of finger millet at 25 cm × 10 cm with inoculation of PSB culture, Root dipping with *Azospirillum* and application of FYM @ 5t/ha recorded higher average number of effective tillers per plant (5.85) and seed yield (14.92q/ha). Broadcasting of finger millet registered lowest yield attributes and yield. The extension gap and technology gap were range between 6.93-7.8 q/ha and 4.3-5.86 q/ha respectively. The cost benefit ratio was 2.39 under transplanting at spacing of 25 cm × 10 cm while it was 1.98 under Farmers Practice (Broadcasting of finger millet, no seed treatment, no application of fertilizer). The combination of organic manures and biofertilizers with proper row spacing might have attributed to better plant growth and development.

ADOPTION OF ORGANIC FARMING IN RAJGARH (BIAORA) DISTRICT OF MADHYA PRADESH

Rupendra Khandwe*, Shalini Chakravarti, Lal Singh and Anil Kumar Mishra

Krishi Vigayan Kendra, Rajgarh (MP)

**Corresponding author: rkhandwe@rediffmail.com*

Krishi Vigyan Kendra, Rajgarh (Biaora) MP a center of Rajmata Vijaya Raje Scindia, Krishi Viswa Vidyalaya, Gwalior is carrying out the activities viz training, on farm testing and demonstration on organic farming in the guidance of Director ATARI, Jabalpur. In the last ten years i.e. 2013-14 to 2023-24 total number 1880 farmers have been benefited by KVK regarding adoption of organic farming.

Some farmers of Rajgarh district have been doing organic farming for the last 5 to 7 years. Out these Farmer Shri Satish Singh Baise, Village Billoda Sadak, Bolck Sarngpur, District Rajgarh is a registered farmer of organic farming. He has been selling organic wheat in the market under the brand name of Malwa Bhog for the last 3 years with his product. He has earned the trust for organic farming in the Rajgarh District, hence his produce can be easily purchased by the consumers of many district of Madhya Pradesh at one and half times above the market price. Apart from doing organic farming themselves, he also trained the farmers, farm women and rural youth for organic farming. Many scientists also reported that organic farming is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way, as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (bio- fertilizers) to release nutrients to crops for increased sustainable production in an eco-friendly pollution free environment.

Similarly, a female farmer Mrs Pavitra Agrwal, village Chatukheda, Block Rajgarh has formed a group with 140 to 150 farm women for the production of vermicompost and earthworms on a commercial level, which is providing economic benefit to many women members as well as social status. Due to these activities women farmers also participated in the agriculture trade fair at ICAR, New Delhi as guest of MP government. Earlier inventor also reported that main principle of organic farming by (Chandrashekar, 2010) are as maintain the long-term fertility of soil, avoid all forms of pollution that may result from agricultural techniques, produce foodstuffs of high nutritional quality and in sufficient quantity, reduce the use of fossil energy in agricultural practice to a minimum and make it possible for agricultural producers to earn a living through their work and develop their potentialities as human being. Ten best farmers of Rajgarh district have been influenced by Krishi Vigyan Kendra activities viz. on-campus, off-campus training programme and demonstrations for the adoption of organic farming in the district.

SOIL QUALITY AND MICROBES IN ORGANIC AND CONVENTIONAL FARMING SYSTEMS

V. K. Singh[1*], Jagdish Morya[2] and Priyesh Prakash Singh[3]

[1]Scientist, Soil Science, [2]Senior Scientist & Head, KVK-Jhabua (RVSKVV Gwalior) M.P

[3] Naini Agriculture Institute, Allahabad

**Corresponding author: vinaysoil@yahoo.com*

Natural farming is completely its protagonist as one of the most potential crop cultivation methods to drastically cut down production costs by reducing dependence on market for purchase of critical inputs. Field experiment is conducted at farmer field by Krishi Vigyan Kendra Jhabua for compared to conventional farming practices, organic farming practices have an advantage over improving soil quality. Here we summarize soil properties, microbial biomass, abundance and diversity of microbes between organic and conventional soil, as well as advantages and disadvantages of various molecular approaches for assessing the diversity of microbial communities. The results confirm that higher levels of total and organic C, total N and soluble organic C are observed in all of the organic soil. However, other soil properties are inconsistent between organic and conventional soil. Consistently, all the studies show that higher levels of microbial biomass C and N are found in organic soil with different plants. Nevertheless, different molecular approaches for assessing the diversity of microbial communities could lead to different results in the same study. In addition, most studies consider that organic management can improve the abundance and diversity of total bacteria and fungi. Knowledge and assessment of organic and conventional farming systems still need to be evaluated in the future work.

EVALUATION OF NATURAL FARMING PRACTICES ON PRODUCTIVITY AND ECONOMICS OF CHICKPEA IN NIMAR REGIONS OF MADHYA PRADESH

Y. K. Shukla*, D.K. Vani and Rashmi Shukla

Krishi Vigyan Kendra, Khandwa, Madhya Pradesh

**Corresponding author: kvk.khandwa@rvskvv.net*

To study the productivity of chickpea under natural farming conditions, front line demonstrations were conducted on 12 farmers' fields in Khandwa district during rabi season of year 2022-23. These demonstrations were carried out in a systematic, scientific manner on farmers' fields to demonstrate the production capacity of chickpea under natural farming conditions. Natural farming demonstration plots recorded mean yield 19.45 q/ha which is 15.91 percent higher than obtained from local check field of farmers' practices (16.78 q/ha). The average extension gap, technology gap and technology index were found as 2.67 q/ha, 5.55 q/ha and 22.20 percent respectively. The natural farming technology showed higher benefit-cost ratio (3.70) as compared to local check (2.86). Major constraint in achieving high production of chickpea under natural farming was the infestation of insect-pests. Satisfaction level of farmers was found higher while they were using natural farming practices under supervision of scientist.

Cost of cultivation was found less in the demonstrations as compared to farmers' practice due to saving of costly chemical insecticide, pesticide and fertilizers. Considering the above observations,

it is revealed that the production of chickpea per unit area could be increased by adopting natural farming practice approaches.

PANCHAGAVYA: THE FARM INPUT FOR ORGANIC FARMING

Anup Badgaiya, Rajesh Khavse*, A. K. Shrivastava, Manoj Ahirwar, Rajesh Dwivedi and Reshma Mehra

Krishi Vigyan Kendra, Damoh (M.P.)

**Corresponding author: agrometkvkdmo@gmail.com*

Panchagavya is an organic product produced by using five different by-products of dung, urine, milk, curd and ghee obtained from an indigenous cow. All the five components are easily available to the farmer and can be made easily by the farmer himself thereby reducing the initial investment. Take fresh cow dung (7kg) and cow ghee (1kg) and mix them thoroughly and incubate them for two days. Next, add cow urine (3litre) along with 10 litre of water and stir them properly for one week daily at morning and evening. Then add sugarcane juice (3 litre) or jaggery mixed in water at the rate of 1:6 ratio. Add cow milk (2 litre), cow curd (2 litre), tender coconut water (3 litre), yeast (100 g) and ripened banana (12). Stir the solution thoroughly and properly for three weeks daily at morning and evening. Finally, Panchagavya is ready and can be used thereafter. All the above-mentioned items are to be mixed either in an earthen pot or a concrete tank or a plastic bucket that has a larger mouth and must be kept open in shade. The ingredients must be added only in the above-mentioned order. Stirring of mixture must be done twice in a day and during the morning and evening and should be done. Panchagavya contains several nutrients i.e. macronutrients like N, P, K and micronutrients which are required for the growth and development of plants and also contains various amino acids, vitamins, growth regulators like Auxins, Gibberellins and also beneficial microorganisms like pseudomonas, *azatobacter* and phosphor bacteria etc.

ORGANIC AGRICULTURE WITH REFERENCE TO CLIMATE CHANGE

Rajesh Khavse*, A. K. Shrivastava, Anup Badgaiya, Rajesh Dwivedi, Manoj Ahirwar and Reshma Mehra

Krishi Vigyan Kendra, Damoh (M.P.)

**Corresponding author: agrometkvkdmo@gmail.com*

Global emissions from crop and livestock agriculture have risen from 4.7 billion tonnes CO_2 equivalent in year 2001 to more than 5.3 billion tonnes today with an increase of more than 14%. Organic agriculture can help to tackle climate change by reducing greenhouse gas emissions. There is a direct correlation between nitrous oxide emissions and the amount of nitrogen fertilizer applied to agricultural land. Nitrous oxide emissions from managed soils account for almost 40% of agricultural emissions in the EU. This is particularly important because the impact of 1 kg of nitrous oxide on warming the atmosphere is about 300 times greater than the impact of 1 kg of carbon dioxide. Because organic farming does not allow the use of synthetic nitrogen fertilizers, focusing instead on establishing closed nutrient cycles, minimizing losses via runoff, volatilization, and emissions, nitrogen levels on organic farms tend to be lower per hectare than on conventional

farms which can contribute to a sustainable climate-friendly production system that delivers enough food. Organic agriculture can also help to combat global warming by storing carbon in the soil. So, many management practices used by organic agriculture (e.g. minimum tillage, returning crop residues to the soil, the use of cover crops, crop rotations and the greater integration of nitrogen fixing legumes), increase the return of carbon to the soil. This raises productivity and favors carbon storage. This means more carbon is stored in the soil, which means less carbon in the atmosphere. Overall, organic farming enables farmers to minimize risk, as a result of stable agro-ecosystems and yields, and its lower production costs.

EFFECT OF FOLIAR APPLICATION OF PANCHAGAVYA ON YIELD AND QUALITY IN VEGETABLE CROPS

Manju Shukla*, Smita Singh, Akhilesh Kumar, M K Mishra and A.K. Pandey

JNKVV-Krishi Vigyan Kendra, CoA, Rewa, M.P.

**Corresponding author: Shuklamanju732@gmail.com*

Small scale cultivators of vegetable crops in tropical countries use the same piece of land continuously, and after some years the crops suffer from nutrients deficiency, especially those of nitrogen and phosphorus leading to poor growth and low yield. Panchagavya is one such fermented liquid organics. Panchagavya is a Sanskrit word that means a blend of five products obtained from cow. The five products include Cow dung + Cow urine + Cow milk + Cow curd and Cow ghee. All these are individually called "Gavya" and altogether called a "Panchagavya". Organic manures play an important role in improving the soil fertility and soil health. In recent times organic farming is gaining place in India and elsewhere in the world. The use of organics in crop production is nothing new to our agriculture and many organics like farmyard manure, compost, neem cake, vermicompost, poultry manure etc. All the five constituents are known to have medicinal properties and are used singly or in combination against many diseases. It is well documented that the organically produced fruits, vegetables and grains are more beneficial for human health. Some farmers in the southern parts of India have used modified formulations of Panchagavya and found them to enhance the biological efficiency of the crop plants and the quality of fruits and vegetables.

PANCHAGAVYA FOR SUSTAINABLE AGRICULTURE

Smita Singh*, K S Baghel, Rajesh Singh and Manju Shukla

JNKVV-Krishi Vigyan Kendra, Rewa (M.P.)

**Corresponding author: sapnapuat@gmail.com*

Indian knowledge systems have the answer to many problems of humanity. Our forefathers had propounded and practiced those systems directed towards attainment of a healthy body and sound mind. But humanity was lured by chemical technology and it abandoned the ancient wisdom generated during the past. *Vrikshayurveda* is a treasure trove of information on agriculture and as such could lend support to organic agriculture; Panchagavya has been one such piece of wisdom, meant to safeguard all the human beings, animals, plants and microorganisms that dwell on the earth's surface. This miraculous combination of five 'gavya' (five products viz. milk, curd, ghee, dung and urine obtained from cow) enhances enormously the biological efficiency and quality of various

crop products. Descriptions of this holy combination could be traced out in Vedas- the divine script of Indian wisdom. Milk contains valuable micronutrients, carotenoids, flavones, phenolic compounds, steroids, vitamins and several minerals. Panchagavya considered to be a highly effective liquid organic manure with multiple functions and can effectively supplement to chemical fertilizers and pesticides. Panchagavya contains macro and micro nutrients and play a significant role in growth and development of plants. It comprises of different amino acids, nutrients, increment controllers like Auxins, Gibberellins and furthermore valuable microorganisms like pseudomonas, Azotobacter and phosphate Solubilizing microbes and so forth Panchagavya additionally contains plant development substances, for example, IAA and Gibberellic acid, just as other fundamental plant supplements. Because of synthetic fertilizers contamination and unfavourable impact on the dirt wellbeing, Panchagavya plays a significant role in organic farming as a substitution for synthetic fertilizers. Besides, considers uncovered the presence of a few useful microorganisms like Actinomycetes, Pseudomonas, photosynthetic microscopic organisms and parasites in Panchagavya which assumes a significant part as development enhancer for harvests and make soil greater efficiency.

COVER CROPS AN ALTERNATE TECHNIQUE FOR WEED MANAGEMENT IN ORGANICALLY GROWN VEGETABLE CROPS

K. P. Tiwari[1], Dhananjai Singh[2*], Vinita Singh[2], R. R. Singh[2], Kundan Muwel[3], K. K. Rana[3], and Arun Rajak[3]

1 Principal Scientist, 2 Scientist, 3 Programme Assistant

JNKVV - Krishi Vigyan Kendra, Umaria (M.P.)

**Corresponding author: dsingh_001@rediffmail.com*

Vegetable crops are a substantial part of our lives and possess great commercial and nutritional value. Vegetable crops are not only less productive but also of lower quality when weeds are present. Ecologically sustainable weed management and the organic cultivation of vegetables both depend on non-chemical weed control as cover crops. Estimates have shown that the yield of vegetables may be decreased by 45%–95% in the case of weed–vegetable competition. Non-chemical weed control in vegetables is desired for several reasons. For example, there are greater chances of contamination of vegetables by herbicide residue compared to cereals or pulse crops. Non-chemical weed control in vegetables is also needed due to environmental pollution, the evolution of herbicide resistance in weeds and a strong desire for organic vegetable cultivation. Although there are several ways to control weeds without the use of herbicides, cover crops are an attractive choice because these have a number of additional benefits such as soil conservation, decreases water losses as evaporation along with the provision of satisfactory and sustainable weed control. Several cover crops are available that may provide excellent weed control in vegetable production systems. Cover crops such as rye, vetch, or Brassicaceae plants can suppress weeds in rotations, including vegetables crops such as tomato, cabbage, or pumpkin. Weeds are a significant issue in the production of vegetables. Several factors affect the degree of vegetable yield reduction and damage to quality caused by weeds. Growers may select a few of these cover crop species, considering their specific farm situations. For example, they may avoid using legumes and prefer cereal cover crops if the soil is rich in nitrogen or has nitrogen residue from the previous crop. On the other hand, legume cover crops may be preferred if the soil has less nitrogen.

ROLE OF BIOFERTILIZERS: A NON–CHEMICAL SOURCE OF PLANTS NUTRIENTS FOR SUSTAINABLE AGRICULTURE

Debesh Singh*, B. S. Kasana, Praveen Gurjar and Swati Tomar

RVSKVV, KVK, Morena M.P.

**Corresponding author:debeshtomar315@gmal.com*

Soil act as a living system only because of microbial population present in it and without this soil unable to produce food. In recent years, biofertilizers have emerged as a promising component of integrating nutrient supply system in agriculture. Biofertilizers are simply selective strain of beneficial soil microorganism which apply either by seed treatment or soil application and act as a source of plant nutrients at very low cost. Special feature of these microorganisms are their sustainable and ecofriendly action. After application, multiplication of microorganisms occurs which further generate plant nutrients in the soil or rhizosphere for plant use. Biofertilizers are help in recycling of nutrients within the components of environment. It provides ''eco-friendly 'organic agro input and it can be expected to reduce the use of chemical fertilizers and pesticides, thus promote organic farming for sustainable agriculture. The use of biological input such as N and P fixing bacteria, mycorrhiza or others are also able to maintain the biological, physical and chemical condition of soil. Biofertilizer could be efficient to increase the growth, yield and quality of agricultural products with very less input cost. Soil microbes are also play some important role in many critical ecosystem processes, including nutrient cycling and homeostasis, decomposition of organic matter etc. Thus biofertilizer can be a better option for sustainable production system.

ORGANIC AGRICULTURE AS AN OPPORTUNITY FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT

Vaishali Sharma*, K. S. Yadav, Mamta Singh, D. P. Singh and Mayank Mehra

Krishi Vigyan Kendra, Sagar, JNKVV Jabalpur (MP)

**Corresponding author: kvk_sagar@rediffmail.com*

India is mainly an agricultural country. Nearly three-fourth of its population is dependent directly on agriculture for a living. Organic Farming is one of the most widely used methods, and it is widely regarded as the best alternative to avoid the negative effects of chemical farming. It also has far more benefits than conventional and other modern agricultural practices. Organic farming unites all agricultural systems that maintain ecologically, socially and economically advisable agricultural production. Therefore, any improvement in agriculture is intimately linked with joy and happiness of the people of this country. Indian agriculture continues to face serious challenges from ever increasing population. Organic farming combines the following practices to ensure sustainable agriculture: crop rotation; soil-protecting technologies for planned chemical land reclamation; agro-technical methods to protect crops from weeds; preservation of agricultural and biological diversity at farms and its efficient utilization; stabilization of agro-landscapes through uniform system of field-protecting forest belts; facilitation of proper use and preservation of water resources; utilization of renewable resources; harmonious balance between crop and animal production through integrated farming and utilization of indigenous technical knowledge .Our economy is based on sustainable agriculture, particularly rainfed agriculture where vegetables occupy a predominant role to play in feeding human, animals and soil. Organic Farming reduces the risk of adverse environmental effects

compared to conventional farming methods; in terms of soil fertility and nutrient management, organic Farming is suited to significantly improve soil fertility and nutrient management on the farm level; and comparative studies on biodiversity demonstrate that organic farming has a greater impact on biodiversity preservation. Modern agriculture, which involves the use of pesticides and fertilizers, harms the environment by affecting soil fertility, water hardness, the development of insect resistance, and an increase in toxic residue through the food chain and animal feed, resulting in increased health problems, and many other serious health concerns and environmental degradation.

SUSTAINABLE AGRICULTURE PATHWAYS: FIELD IMPLEMENTATION EXPERIENCES - LESSONS LEARNT AND WAY FORWARD

M. Suryamani[1*] and A. Sreelakshmi[2]

[1*]Former Director, Extension Education Institute, P.J.T.S. Agricultural University, Rajendranagarand Capacity Building Expert, PRDIS, Hyderabad.

[2]Coordinator Projects, Participatory Rural Development Iniatives, Hyderabad, India.

**Corresponding author: prdis.hyd@gmail.com*

Participatory Rural Development Initiatives Society (PRDIS) since its inception for about two and half decades has been focusing its attention on Sustainable Agricultural Development initiatives, mostly on Productivity Enhancement Strategies with Eco Friendly Technologies, Natural Resource Management and supply chain management with different crops benefitingabout 1 Million farmers directly and 2 million farmers indirectly in Andhra Pradesh, Telangana, Tamil Nadu, Karnataka, Chattisgarh, Jharkhand, Orissa states and in Uganda & Ethiopia of Africa.This paper is about PRDIS field experiences in promoting conventional, organic, natural and integrated crop management principles and practices in production of Paddy, Better Cottonand residue-free Chillies. Our case study highlights a comprehensive approach that amalgamates organic, natural, traditional wisdom, and eco-friendly methodologies to achievesustainable and high-quality crop yields. Based on the lessons learnt out of three SustainablePathways, PRDIS has come out with an integrated crop management and farming system approach, which has been implemented with about 1,00,000 Paddy, Cotton and Chilly growingfarmers in Telangana, Andhra Pradesh, Chhattisgarh and Jharkhand. The integration of theseprinciples aims to enhance crop yield, decrease cost of cultivation, improve product quality and minimize the environmental footprint of farming practices besides, building the capacities of farmers on decent work, forming and running a successful cooperatives/ farmer organisation.

Key components of the Integrated Farming System approach, training of farmers through Farmer Field Schools to implement Regenerative Agriculture Practices including soil health management, water conservation, biodiversity, crop rotation, intercropping, use of Bio fertilisers, botanical pesticides and green label pesticides based upon need and decent work,promotion of FPOs for procuring, processing and collective bargaining. Besides, digital technologies, remote sensing, field book, data analytics, credit and market linkages were established. Similarly, through Farmer Business schools, Agripreneurs are developed in villages and agri startups are promoted. In conclusion, this paper provides valuable insights into the successful adoption of integratedprinciples and practices in agricultural production, showcasing a tangible and positive impacton increased Paddy production, Better Cotton and residue-free Chillies. The findings contribute to serve as a practical guide for farmers, policymakers, and researchers aiming to enhance the sustainability and productivity of agricultural systems.

EFFECT OF ORGANIC INPUTS ON CHEMICAL PROPERTIES OF SOIL UNDER CERTIFIED ORGANIC FARMS IN NAGPUR DISTRICT

Padmaja H. Kausadikar*, Ommala D. Kuchanwar, P. R. Kadu, R. N. Katkar, Harsha S. Mendhe, Bhavana Wankhede, Neha K. Chopde and Shanti Patil

Soil Science and Agricultural Chemistry Section, College of Agriculture, Nagpur

**Corresponding author: kausadikar_padmaja@yahoo.in*

The field investigation in relation to "Effect of organic inputs on chemical properties of soil under certified organic farms in Nagpur district" was carried out during kharif- rabi season at the certified organic farmer's fields of Nagpur district. Soil samples of 0-20 cm depth were collected randomly after the harvest of crops from six locations viz., Selu, Kalmeshwar, Gangner, Saoner, Chacher and Chinchbhavan of Nagpur district were selected. The certified organic farmers applying FYM @ 2.5 to 10 t ha^{-1}, Ghanjivamrut 500 kg ha^{-1} and Jivamrut 500 lit ha^{-1} from last 7 to 17 years for different crops. The results revealed that soil pH was reduced and electrical conductivity of soil (0.215 to 0.316 dS m^{-1}) remained almost unchanged due to incorporation of organic and inorganic sources. The application of organic inputs increased organic carbon by 2.47 to 46.48 % and maximum available N content of soil by 2.08 to 44.18 % over the application of fertilizers alone. The available P content of soil after harvesting of crops varied from 15.26 to 30.00 kg ha^{-1} and comes under medium to high range categories. The application of organic sources from 7 to 17 years decreased soil available potassium by 1.26 to 11.95 % over inorganic. The variation in available sulphur (11.03 to 14.61 mg kg^{-1}) was observed and it was found low to moderately high amount in all locations. Correlation matrix observed that N, K, Cu and Mn maintained positive relationship with the yield of mandarin crops. Whereas; EC, OC and N were positively correlated with yield of rice crop.

DYNAMICS OF ORGANIC INPUTS ON SOIL HEALTH UNDER CERTIFIED ORGANIC FARMS IN NAGPUR DISTRICT

Ommala D. Kuchanwar*, Padmaja H. Kausadikar, P.R. Kadu, R.N. Katkar, Shanti Patil, Harsha S. Mendhe, Bhavana Wankhede, Neha K. Chopde, Shalini Badge and Tinni Pillai

Soil Science and Agricultural Chemistry Section, College of Agriculture, Nagpur,

Amravati Road, Nagpur (M.S.), India

**Corresponding author: ommalakuchanwar954@gmail.com*

The field investigation in relation to "Dynamics of organic inputs on soil health, yield and quality of crops under certified organic farms in Nagpur district" was carried out at the certified organic farmer's fields of Nagpur district to assess the soil properties, quality and yield of different crops as influenced by various organic resources. Soil samples of 0-20 cm depth were collected randomly after the harvest of crops from six locations of Nagpur district were selected for recording various observations and collected plant samples for quality parameters. Yield of crops was noted from farmer's field of above locations.

The certified organic farmers applying FYM @ 2.5 to 10 t ha^{-1}, Ghanjivamrut 500 kg ha^{-1} and Jivamrut 500 lit ha^{-1} from last 8 to 18 years for different crops. The results revealed that soil pH reduced due to continuous application of various organic sources to field. However, electrical conductivity of soil (0.254 to 0.497dS m^{-1}) remained almost unchanged. The application of organic inputs increased organic carbon by 7.24 to 61.80 per cent at different locations over fertilizer application. The bulk density of soil decreased and hydraulic conductivity and water holding capacity increased due to long term effect of various organic sources.

The application of organic sources from 8 to 18 years resulted in maximum available N content of soil by 14.61 to 64.57 per cent over the application of fertilizers alone. The available P content of soil after harvesting of crops varied from 12.09 to 25.56 kg ha^{-1} and comes under medium to high range categories. The application of organic sources from 8 to 18 years increase soil available potassium by 2.16 to 15.37 per cent over inorganic. The variation in available sulphur (10.64 to 15.38 mg kg^{-1}) was observed and it found low to moderately high amount in all locations. From the study it can be concluded that, the application of organic inputs improved the physical, chemical, biological properties and fertility status of soil.

IMPACT OF FIELD DEMONSTRATION OF ORGANIC FARMING OF RICE ON IMPROVING SYSTEM SUSTAINABILITY

Vijay Jain, Aarti Tikariha , Neetu Swarnkar, Ishwari Kumar and Kamal Narayan Verma

Krishi Vigyan Kendra, Pahanda (A), Durg, IGKV, Raipur

**Corresponding author: kvk.durg@igkv.ac.in*

Field demonstration was conducted during *kharif season* from 2019-20 to 2021-22 at farmers field of Village Arasnara, Ameri, Batang Gabdi and Sirsakala of Patan Block, Durg District of Chhattisgarh, India with package and practices of organic farming of scented rice i.e use of green manure, farmyard manure, vermicompost, jiwamrit, beejamrit, neemastra and agniastra. A total of 19 farmers were selected from aforesaid villages with objective of improving system sustainability and better return from per unit area. The Krishi Vigyan Kendra, Pahanda, Durg has demonstrated organic farming including certification. During demonstration FYM/Vermicompost @ 5 t ha^{-1}, improved variety of scented rice (CG Jawaphool trombey), green manuring of dhaincha @30 kg ha^{-1} and seed treatment with beejamrit @ 20 litre per 100 kg of seed, PSB culture @ 5 gm per kg seed and azospirillum culture@ 5 g per kg seed and foliar application of jiwamrit @ 450 l ha^{-1} were applied. For insect control using neemastra @ 250 litre ha^{-1}. Under organic farming yield of 19.54 q ha^{-1} recorded with 55.7 percent decrease yield compared to inorganic farming, but net return per unit area were recorded Rs.71685/- and B:C ratio 2.82 with an increase of 60.45 percent and 30.5 percent respectively under organic farming compared to inorganic farming.

SEED PRODUCTION PROGRAMME OF SCENTED RICE FOR PROMOTION OF ORGANIC FARMING

Aarti Tikariha* and Vijay Jain

Krishi Vigyan Kendra, Pahanda (A), Durg, IGKV, Raipur

**Corresponding author:verma.aarti2503@gmail.com*

Seed production programme of organic scented variety of rice has been taken at farm of Krishi Vigyan Kendra, Pahanda-A, Durg, Chhattisgarh since 2018 for organic seed production of scented rice. Component of organic farming i.e. green manure, farmyard manure, vermicompost, beejamrit and jiwamrit were applied. For the control of insect used organic preparation i. e. neemastra, agniastra and trichocards. Buffer zone has been maintaining to avoid contamination. Certification of organically produced seed has been taken from CGCERT, Raipur. Since 2018, we have produced 52 q seed and distributed to the farmer to promote organic farming in the district and more than 100 hactare has been horizontally spread. Seed production of dhaincha also has been taken on the bunds of rice field to fulfil the need of green manure seeds for green manuring and to reduce the cost of green manuring in organic farming.

STUDIES ON BIO FERTILIZERS WITH GRADED DOSES OF NPK ON GROWTH, FLOWERING, YIELD ATTRIBUTES AND ECONOMICS OF ANNUAL CHRYSANTHEMUM

Shalini Badge[1*], Maya Raut[2], Ommala Kuchanwar[3], Shanti Patil[4], Beena Nair[5], Seema Thakre[6] and Hemlata Khobragade[7]

Horticulture Section, College of Agriculture, Nagpur (Dr. P.D.K. V., Akola)

**Corresponding author: shalinibadge@gmail.com*

A field experiment was carried out to study the effect of bio ferlilizers with graded doses of NPK on growth, flowering, yield attributes and economics of annual chrysanthemum cv. Local during the winter season at of Horticulture Section, College of Agriculture, Nagpur. The objective of experiment was to find out the suitable dose of NPK along with bio fertilizers to get maximum flower production with high B:C ratio. The results showed that maximum vegetative growth, (i.e. height of plant, number of branches plant^{-1}, stem diameter, plant spread)initiation of first flower, days to 50% flowering, diameter of fully opened flower, longevity of flower intact on plant and yield attributes like number of flowers/plant, yield of flowers/plant (g) and yield of flowers ha^{-1} (125.18 q) with high B:C ratio (!:4.20) were significantly maximum with the treatments receiving 80% NPK +*Azospirillum* +*Azotobacter* +PSB at 5 kg/ha each followed by the treatment 80% NPK +*Azospirillum* +PSB at 5 kg/ha each over control (RDF) and rest of the treatments.

RESPONSE OF TUBEROSE GENOTYPES TO GIBBERELLIC ACID AS FOLIAR SPRAY

Seema Thakre[1*], D. M. Panchbhai[2], V. U. Raut [3], H.S. Mendhe[4,] and Shalini Badge[5]

[1]Assistant Professor, [3]Professor, [5]Associate Professor, Deaprtment of Horticulture, College of Agriculture, Nagpur

[2]Dean, College of Horticulture, P.D.K.V., Akola

[4]Assistant Professor, Department of Extension Education, College of Agriculture, Nagpur

**Corresponding author: seemaat2015@gmail.com*

An experiment entitled, "Influence of tuberose genotypes to GA_3 for growth, flowering, yield and flower quality" carried out during July 2015-16 and July 2016-17 at Horticulture Section farm, College of Agriculture, Nagpur. The trial was laid out in split plot design with twenty treatment combinations replicated thrice. The treatments comprised of tuberose genotypes *viz.*, Prajwal, Shringar, NT-01, NT-06 and NT-09 and foliar application of GA_3 *viz.*, GA_3 50 ppm, GA_3 100 ppm, GA_3 150 ppm and control treatment were given at 30 and 60 days after planting.

The result of the present investigation revealed that, vegetative growth in respect of plant height, leaf area and early initiation of tuberose spike were found maximum with the genotype Prajwal and foliar application of GA_3 100 ppm. In respect of spike yield and quality parameters of tuberose such as number of spike plant^{-1}, length of spike, weight of spike, diameter of spike and florets spike^{-1} were found to be the maximum in tuberose genotype Prajwal with foliar application of 100 ppm gibberellic acid.The maximum gross monetary return, net monetary return and cost: benefit ratio were recorded with the variety Prajwal and foliar application of 100 ppm gibberellic acid.

EFFECT OF 19:19:19 AND HUMIC ACID ON GROWTH AND YIELD OF ROSE UNDER POLYHOUSE

Seema Thakre[*], Komal Warkhade, V.U. Raut, Neha Chopde and Harsha Mendhe

[1]Assistant Professor [3]Professor, [4]Associate Professor, Department of Horticulture College of Agriculture, Nagpur

[2]PG, Scholar, College of Agriculture, Nagpur

[5]Assistant Professor, Department of Extension Education, College of Agriculture, Nagpur

**Corresponding author: seemaat2015@gmail.com*

The Experiment entitled "Effect of water soluble fertilizer and humic acid on rose under protected conditions." was carried out at College of Agriculture, Nagpur (MS.), Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Akola. Dist. Akola during rabi season in year 2021-2022. The experiment was laid out in Factorial Randomized Block Design with four levels of 19:19:19 water soluble fertilizer [Control, 200 g 19:19:19, 300 g 19:19:19 and 400 g 19:19:19] and three levels of humic acid [Control, 500 ppm humic acid, 750 ppm humic acid] with twelve treatment combinations replicated thrice.

The result of the present investigation revealed that, significantly maximum plant height and plant spread were recorded in treatment combination (300 g 19:19:19 + 750 ppm humic acid). Whereas, interaction effect of 19:19:19 WSF and humic acid for number of primary and secondary

branches, number of leaves plant^{-1}, leaf area, days to emergence of 1st flower bud, days to opening of flower from bud emergence, 50% flowering, days to 1st harvesting after pruning were found non-significant. In respect of yield parameters like highest yield plant^{-1}and plot^{-1} were recorded in applications of 300 g 19:19:19 water soluble fertilizer and 750 ppm humic acid.

ORGANIC AGRICULTURE REDUCES CLIMATE CHANGE MORE THAN CONVENTIONAL AGRICULTURE

Gyanendra Pratap Tiwari[1*], Sarvesh Tripathy[2], Sushil Kumar[1*] and Jitendra Bhandari[3]

[1]Subject Matter Specialist-Krishi Vigyan Kendra, Jaora, Ratlam (M.P.), [2] Sr. Scientist & Head, Krishi Vigyan Kendra, Jaora, Ratlam (M.P.) [3]YP-II, Krishi Vigyan Kendra, Jaora, Ratlam (M.P.)

**Corresponding author: sarveshtripathy@gmail.com*

The cornerstones of organic agriculture, an alternative farming practice that sacrifices synthetic pesticides and fertilizers in favour of biological control and soil fertility conservation, are crop rotation, green manure, composts, and biological pest control. Although conventional and organic agriculture have been widely contrasted in terms of crop yields, income, and other variables, very few studies have investigated the beneficial impact of both on mitigating climate change. This review analyses the effectiveness of conventional and organic agriculture in mitigating climate change. The analysis indicates that since organic agriculture is better at eliminating greenhouse gas (GHG) emissions, including carbon dioxide, nitrous oxide (N2), and methane (CH), it has more ability to mitigate climate change. Additionally, it stimulates soil carbon sequestration beyond what typical farming does. Many methods of farming that are often used in organic agriculture also help reduce greenhouse gas emissions and promote soil carbon sequestration. A few of such procedures include crop rotation using leguminous crops, little tillage, and returning crop leftovers to the soil. The certification of methods of farming, a process needed for organic agriculture, promotes awareness about organic rules and principles. As a result, it could encourage the development of creative yet effective approaches with the goal of mitigating the effects of climate change. In addition, organic farming is significantly more climate change-adaptable than traditional agriculture. However, studies must be done to figure out whether sustainable agriculture may mitigate the effects of climate change. At present, recognition is based on organic yields surpassing conventional yields, an occurrence that has been confirmed to occur in nations that are developing. More research must be done to maximize the potential of organic agriculture in advanced countries to reduce climate shifts and enhance organic yields. They showcase and study potential methods of improving the effectiveness of organic agriculture to mitigate climate change.

ROLE OF EXTENSION IN PROMOTING ORGANIC FARMING

Ashish Kumar Nagar[1*], Kamini Bisht [2], Varsha More[3], and Ashutosh Singh Rajpoot[4]

[1, 2, 3,4] Department of Extension Education, College of Agriculture, JNKVV, Jabalpur (MP)

**Corresponding author: Nagarashish09@gmail.com*

The organic farming sector in India has been growing steadily in recent years. The Indian government has been actively promoting organic farming through various policies and initiatives. Here is an overview of the Indian scenario regarding organic farming. India ranks among the top countries globally in terms of the total area under organic farming. As of my last knowledge update in January 2022, India had the largest number of organic producers (farmers) in the world. The total organic farming area in India had exceeded 3.6 million hectares. Several Indian states have made significant strides in organic farming. States such as Sikkim, Mizoram, and Uttarakhand are known for their strong focus on organic agriculture. Sikkim, in particular, was declared the first organic state in India and is often cited as a model for successful organic farming practices. The Indian government has introduced several initiatives to promote organic farming. The National Mission on Sustainable Agriculture (NMSA) and Paramparagat Krishi Vikas Yojana (PKVY) are examples of schemes that provide financial support and training to farmers to transition to organic practices. Extensions play a crucial role in promoting organic farming by providing farmers with the knowledge, resources, and support needed to transition to and sustain organic agricultural practices. Extension services educate farmers about the principles and practices of organic farming. They offer training programs, workshops, and seminars to help farmers understand organic techniques, such as composting, crop rotation, and natural pest control. Here are some key roles that extension services play in promoting organic farming: Education and Training, Technical Assistance, Certification Guidance, Research and Innovation, Pest and Disease Management, Soil Health Improvement, Market Access, Farmer Networking, Sustainability and Environmental Stewardship, Advocacy and Policy Support, Adaptation to Local Conditions. By fulfilling these roles, extension services contribute to the growth and adoption of organic farming, which, in turn, has numerous benefits, such as improved soil health, reduced environmental impact and healthier produce for consumers. Organic farming methods also promote sustainable agriculture and support rural livelihoods.

A STUDY ON KNOWLEDGE AND ADOPTION OF ORGANIC FARMING PRACTICES AMONG THE FARMERS IN GURSARAI BLOCK OF DISTRICT JHANSI (UTTAR PRADESH)

Dileep Vyas[1*], A. K. Bharti[2], Mani Prakash Shukla[3] and Lalla Ram[4]

[1,3&4] Ph.D. Research Scholar, Agricultural Extension Education, Chandra Sekhar Azad University of Agriculture and Technology, Kanpur

[2]Assistance Professor, Agricultural Extension, Bundelkhand University, Jhansi

**Corresponding author: dileepvyas7@gmail.com*

Organic farming is defined as a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on farm agronomic, biological and mechanical methods in exclusion of all synthetic off- farm inputs. A study was carried out in Jhansi district of Uttar Pradesh with the objective to find out the extent of knowledge and adoption of the respondents regarding

organic farming practices. 10 villages, where activity of organic farming was operational were selected randomly from Gursarai block of the district. Further, from each village 10 farmers were selected by random sampling method. Thus, a total of 100 respondents spread over 10 villages were selected for this study.

Results of the study revealed that, 50.00 percent of the large land holding farmers had medium level of knowledge regarding organic farming practices. Also, 42.30 percent medium and 48.14 percent small land holding farmers had medium level knowledge. Further it was found that, 50.00 percent of respondents had medium level of adoption of organic farming practices. It was concluded that, small land holding category farmers had full knowledge of only five practices of organic farming, while farmers having medium land holding has full knowledge of only ten practices. Further, it was reported that farmers of small landholding category had full adoption about only six practices of organic farming, partial adoption of ten practices and no adoption of fifteen practices. On the basis of land holding size that farmers having medium landholding had full adoption about of six practices of organic farming and partially adopted sixteen practices and no adoption of sixteen practices. While, farmers of large holding category had full adoption of thirteen practices of organic farming, partial adoption of eighteen practices and no adoption of three practices.

IMPACT OF FRONT LINE DEMONSTRATION IN ADOPTION OF BIO-FERTILIZER SEED TREATMENT IN SOYBEAN

M. K. Rathod[1*], H.S. Mendhe[2] and R.S. Waghmare[3] and P. P. Wankhade[4]

[1]Professor, [2]Assistant Professor, [3&4]Associate Professor

Department of Extension Education

College of Agriculture, Nagpur

**Corresponding author: milindrathod73@gmail.com*

The study was conducted in Wardha district of Maharashtra State where front line demonstrations on seed treatment in soybean with bio-fertilizers were conducted by KVK on farmers field. Total fifty FLDs were evaluated to access the impact of bio-fertilizers on adoption and relative advantage, compatibility, complexity and observability of the technology. It was found that seed treatment of bio-fertilizer in soybean gives 56.93 per cent more yield as compare to untreated seed plot. Almost all the respondents expressed that seed treatment requires no labour and majority of them said that cost of bio-fertilizers were also very low. In the compatibility issues cent per cent farmers reported that this technology is suitable to agro-climatic conditions, consistent with existing situation and compatible with norms of culture. Over 90.00 per cent respondents accepted that it meets felt need of farmers. All farmers stated that seed treatment is easy to understand and perform. Effect of bio-fertilizers in soybean was found visible to 100.00 per cent farmers. In the categorization, majority of respondents were found to be taken high relative advantage, highly compatible, low complexity and high observability. In total, effectiveness of bio-fertilizers calculated was 91.96. Regarding impact on adoption, most of the respondents (68.00%) were accepted the technology but not able to adopt due to some constraints. Farmers have given feedback that with the low cost inputs, technology was very effective to increase the yield of soybean (100.00%), bio-products are not readily available in local area (100.00%), darken the hands and cloths and burning eyes are the complaints of farmers using bio-treatment of the seed. In the relational analysis, relative advantage and observability were positive and highly significant with the adoption of bio-fertilizer treatment whereas, complexity was highly but negatively correlated with the adoption.

KNOWLEDGE AND ADOPTION BEHAVIOUR OF FARMERS TOWARDS BIO-FERTILIZERS IN PADDY

M. K. Rathod [1*], H. S. Mendhe[2], P. P. Wankhede[3], R. S. Waghmare [4]

[1] Professor, [2] Assistant Professor, [3] and [4]Associate Professor

Division of Extension Education, College of Agriculture, Nagpur (M.S) India

**Corresponding author: milindrathod73@gmail.com*

The present study was conducted in Bhandara district of Vidarbha region with sample size of 120 respondents from 12 villages. After statistical analysis it was concluded that while 69.16 per cent respondents had medium level of adoption of bio-fertilizers in paddy while majority of respondents (83.33%) had medium level of knowledge regarding bio-fertilizers. Average bio-fertilizers knowledge of respondents was 57.91 per cent, however their adoption was only 39.56 per cent. That indicates the gap in knowledge and adoption of bio-fertilizers by paddy growers. There is wide scope to improve the level of adoption of biofertilizers, the findings therefore pointed out that inadequate and sporadic efforts need to made in popularizing and taking the low cost technology to the door steps of farmers. Vast majority of respondents (93.33%) were found in moderately favourable attitude towards use bio-fertilizers. In the constraints analysis lack of training to use bio-fertilizers, lack of farmers' confidence, lack of timely availability and non availability of biofertilizers at local level were the major constraints faced by the farmers in study area.

KNOWLEDGE AND ATTITUDE OF FARMERS REGARDING BIOFERTILIZERS

H. S. Mendhe[1*], M. K. Rathod, P.P. Wankhede and R. S. Waghmare

[1] Assistant Professor, [2] Professor, [3 and 4]Associate Professor

Department of Extension Education, College of Agriculture, Nagpur, M.S., India.

**Corresponding author: harshamendhe180@gmail.com*

Biofertilizers are defined as preparations containing living cells or latent cells of efficient strains of microorganisms that help crop plants' uptake of nutrients by their interactions in the rhizosphere when applied through seed or soil. They accelerate certain microbial processes in the soil which augment the extent of availability of nutrients in a form easily assimilated by plants. The farmers are required to posses information about various biofertilizers and their associated practices to adopt them for inoculation to different crops. In such situation biofertilizers are the cheap source to maintain fertility as well as soil moisture. Keeping this in view, present study was conducted in to measure the knowledge level and to know the attitude of farmers regarding biofertilizers. The study was conducted in Katol Panchayat Samiti 10 villages were selected by simple random sampling method.Out of 600 farmers of this Panchayat Samiti which was supplied with the biofertilizers, only 100 farmers were selected by proportionate ramdom sampling from selected 10 villages. These selected 100 farmers were considered for the study as respondents. While majority of the farmers had high medium level of adoption and attitude. Majority of them had highly favorable view towards attributes of biofertilizers and were medium in use of biofertilizers.

STUDY OF CONSTRAINTS FACED BY THE FARMERS IN ADOPTION OF A BIOFERTILIZERS

H.S. Mendhe[1*], R.S. Waghmare[2] and P.P.Wankhede[3]

[1]Assistant Professor,[2&3]Associate Professor

Department of Extension Education, College of Agriculture, Nagpur, M.S., India.

**Corresponding author: harshamendhe180@gmail.com*

The study was undertaken regarding the constraints faced by the farmers in adoption of bio-fertilizers in College Extension Block Nagpur. Randomly selected 100 respondents were surveyed. The study indicated non-significant relationship with awareness and adoption levels of biofertilizers in respect of age. However, the selected variables *viz.* education, land holding, annual income, socio economic status, scientific orientation, extension contact and cosmopoliteness of the farmers showed significant relationship with the awareness and adoption of bio-fertilizers by the farmers. Majority of the farmers had high medium level of adoption and attitude. Majority of them had highly favourable view towards attributes of biofertilizers and were medium in use of biofertilizers. Major constraints expressed by the respondents were lack of information and skill about use phosphate solubilising and composting biofertilizers and sometimes non-availability of biofertilizers in local market before sowing time. Majority of the farmers expressed that biofertilizers requires less expenditure on chemical fertilizers and increase crop yield and productivity.

ORGANIC MILLETS AND CLIMATE CHANGE IN RAINFED AREAS OF INDIA

Om Prakash

ICAR-Indian Agricultural Research Institute, New Delhi

Corresponding author: opsingh@iari.res.in

One of the most evident consequences of climate change phenomenon isglobal warming which refers to the increasing average temperature worldwide. Approximately 0.85°C have been added to the Earth's temperature since 1880 as reported by Intergovernmental Panel on Climate Change. About 85 percent of Indian farmers are marginal and small landholders and nearly 60percent of the net sown area comes under rainfed agriculture. This makes India vulnerable to climate change considerably effecting the cropping system, livestock, fisheries, poultry, soil, pest, and diseases. The anticipated impacts of climate change on agriculture are substantial, with projections indicating that by 2100, productivity of cereal crops, like rice and wheat will be negatively impacted for 2-4°C increase in temperature and rise in the rate of precipitation. Land-use change, due to urbanization and deforestation and agricultural practices, affect the physical and biological properties of the Earth's surface. In India, the rainfed agriculture is practiced over 90 m.ha. area out of 142 m. ha. total net cultivated area accounting for 60% of net cultivated area. Though rainfed agriculture contributes 44% of food gain production its contribution in coarse cereals, pulses, oilseeds and cotton is about 91%, 91%, 80% and 60% respectively Yields of both kharif and rabi crops decreased as temperature increased; a 2°C increase resulted in 15-17 per cent decrease in the grain yield of both crops, but beyond that the decrease was very high in wheat. Since, there is greater probability of increase in temperature in rabi, it is likely that the productivity of wheat and other rabi crops would be

significantly reduced. Wheat yields in central India are likely to suffer by up to 2 per cent in the pessimistic. Sorghum and other millets, being a C4 plant, does not show any significant response to increase in CO2 and hence the different scenarios do not affect its yield. However, if the temperature increases are higher, western India may experience some negative effect on productivity due to reduced crop durations. Therefore, keeping in view of the International Year of Millets-2023, there is a need of the hour to promote organic millets (Shree Anna) like, sorghum, pearl millet, finger millet, kodo, sawank and foxtail minor millets in rainfed areas as they are rich in micro-nutrients and will also help in food and nutritional security with start-ups for packaging and marketing in different agro-climatic zones of India in the prevailing climatic conditions.

ADOPTION BEHAVIOR OF FARMERS TOWARDS BIOFERTILIZERS AND BIOAGENTS

P. P. Wankhade [1*], S.L. Deotale[2], M.K. Rathod[3], H.S. Mendhe[4] and R.S. Waghmare[5]

[1& 5]Associate Professor, [2&4]Assistant Professor, [3]Professor,

Department of Extension Education, College of Agriculture, Nagpur, India

**Corresponding author:* wankhadepp@gmail.com

The present study entitled "Adoption Behavior of farmers towards Biofertilizers and Bioagents" was carried out in Nagpur district of Nagpur division in Vidarbha region of Maharashtra. An exploratory social research design was used. The data was collected from 10 villages from two tahsils namely; Kalmeshwar and Katol of Nagpur district. From each tahsil, five villages were selected and from each village 12 farmers who were using Biofertilizers and Bioagents were selected purposively and were interviewed with the help of structured interview schedule. Thus this investigation was confined to a sample of 120 farmers.

It was observed that, majority of the respondent farmers i.e. 80.00 per cent farmers were having knowledge about Azatobacter and also it is found that 77.5 per cent farmers were having adoption of Azatobacter. As regards Phosphate Solubulizing Bacteria (PSB), it is evident that, a significant number, i.e. 88.33 per cent farmers were having knowledge about it while 84.17 per cent farmers were having adoption of PSB. Majority of respondents had full and partial knowledge of application of Trichoderma for recommended dose for seed treatment (54.17 % and 23.33 %), application of Trichoderma for recommended dose for seedling treatment (52.50 % and 21.67%), however 25.83 per cent had no knowledge about it, also majority of respondents had no knowledge about recommended dose of Azolla for soil application (97.50 %).

It is observed from the findings that majority of respondents strongly agreed followed by agreed for the attitude statements that, use of biofertilizer makes soil fertile and productive (59.1% and 34.1 %), The use of biofertilizer help in increase the crop yield (55.8 % and 37.5 %).Majority of respondents expressed, 'Non availability of Biofertilizer/Bioagent at local level' (97.50 %) (Rank I) , followed by, 'Lack of training on use of Biofertilizer/Bioagent' (94.17 %) (Rank II), 'Lack of timely availability of Biofertilizer/Bioagent' (93.33 %) (Rank III), 'Darken the hands and clothes during the use' (90.83%) (Rank IV), 'Burning of eyes due to use of powder form of biofertilizer/bioagent' (89.17 %) (Rank V), 'Unawareness about the benefits of Biofertilizer/Bioagent' (88.33 %) (Rank VI), 'Lack of confidence in use of Biofertilizer/Bioagent' (85.83 %) (Rank VII) and 'Lack of skill in use of different Biofertilizers/Bioagents' (65.83%).

CONSTRAINTS IN THE ADOPTION OF ORGANIC FARMING PRACTICES BY THE FARMERS IN MUZAFFARPUR DISTRICT OF BIHAR, INDIA

M. L. Meena*, B. C. Anu and M. S. Kundu

Krishi Vigyan Kendra, Turki, Muzaffarpur (Bihar) 844127

Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur (Bihar)

**Corresponding author e-mail: mlmeenacazr@gmail.com*

Green revolution in India has witnessed a jump in agricultural production with the introduction of high yielding varieties of various crops and by following intensive cultivation practices with the use of fertilizers, pesticides and other inorganic inputs. Organic agriculture is a holistic food production system works with the sustainable use of locally available natural resources. The need to adopt a comprehensive approach for the promotion of organic agriculture by taking cooperation of all stakeholders, environmental friendly technologies, marketing infrastructure and financial support environmentally friendly for quality and quantity organic food production. An environmentally sustainable system of agriculture like organic agriculture will be able to maintain a resource balance, avoid over exploitation of resources, conserving soil natural quality and soil health and biodiversity. Biological research into soil and soil organisms has proven beneficial to organic farming. Varieties of bacteria and fungi break down chemicals, plant matter and animal waste into productive soil nutrients. In turn, they produce benefits of healthier yields and more productive soil for future crops. Keeping in mind the study was undertaken to assess the constraints faced by the farmers in the adoption of organic farming practices in Muzaffarpur district of Bihar state. Results indicated that among the physical constraints, the foremost physical constraints expressed by vast majority of the respondents was inundation due to labour scarcity (77.31 per cent). Among the communication constraints, the foremost communication constraints expressed by most of the respondents where lack of training 85.24 per cent. High cost of inputs (86.11 per cent) was the major socio-economic constraint followed by lack of credit facilities (81.00 per cent). High cost of labour (63.47 per cent) and high rate of interest (47.06 per cent) were felt as the socio-economic constraints by the respondents.

CHALLENGES AND OPPORTUNITIES IN ORGANIC FARMING

Neeraj Upadhyay[1*] and Alok Kumar Ghosh[2]

Department of Extension Education, JNKVV, Jabalpur (M.P.)

**Corresponding author: upadhyayneeraj882000@gmail.com*

Organic farming has attracted considerable attention from those who see it as ideological nonsense. In the spectrum of agricultural systems, organic farming has emerged as one of the best known alternative farming system to maintain equilibrium between production and sustainability. According to the report of Millennium Ecosystem Assessment Synthesis (2005) states that global food production is adequate, yet poverty and environmental destruction persist. Organic agriculture offers trade opportunities for farmers in developed and developing countries, but there is a main problem of timing. Generally, organic produce and meats require efficient supply chains to reach the market quicker. Big challenge we are facing is to change the mindset of farmers to embrace organic farming even the response of soil is a slow process. Another big challenge is to promote organic

farming when an individual farmer takes up to organic farming without any positive response with his neighbours. According to the International federation of organic agriculture movement (IFOAM) General assembly (2008), organic agriculture is a production system that sustains the health of soil, ecosystem and people. Organic farming has its importance of creating sustainable agricultural system for the long-term health of humankind and the biosphere as a whole.

PROSPECTS AND CHALLENGES OF ORGANIC FARMING IN INDIA

Neeraj Upadhyay[1*], Alok Kumar Ghosh[2] and Subhendu Sekhar Sarangi[3]

Department of Extension Education, JNKVV, Jabalpur (M.P.)

**Corresponding author:* upadhyayneeraj882000@gmail.com

Organic agriculture is found to be superior to conventional farming because of increased human labour employment, lower cost of cultivation, higher profits, better input use efficiency and reduced risk leading to increased income, enhanced self-reliance and livelihood security of the farmers and maintaining soil health and environment. Indian agriculture for long remained sustainable only because of the low external input factors. Organic food is more expensive because farmers do not get as much out of their land as conventional farmers do. Production costs are higher because farmers need more workers. Marketing and distribution is not efficient because organic food is produced in smaller amounts. One of the biggest challenges faced by organic farmers is pests and diseases. Because organic farmers do not use synthetic pesticides or herbicides, they are more vulnerable to damage from insects, fungi, and other pests. The main issue emerging in organic farming include yield reduction in organic farm is certification, marketing and policy support. Furthermore, organic farming restricts the use of off-farm inputs because it leads to residue on foodstuff and adverse effects on the environment, while it supports in-farm inputs to developed success of organic agriculture**.**

EFFECT OF ORGANICS AND IPM ON YIELD ATTRIBUTES, FRUIT YIELD AND DISEASE INCIDENCE IN CHILLI IN SAGAR DISTRICT OF MADHYA PRADESH

Ashish Kumar Tripathi

Jawaharlal Nehru Krishi Vishwavidyalaya, Krishi Vigyan Kendra, Sagar-II (MP)

Corresponding author: aktjnkvv@gmail.com

A study was conducted to assess the economic feasibility of organic cultivation and IPM technology in Chilli in Sagar district under Bundelkhand region of Madhya Pradesh during 2016-17 to 2018-19 in participatory mode at farmers' fields. Among the organic nutrient sources, basal application of FYM @ 10 tonne, vermicompost @ 2.5 tonne and Neem G @ 100 kg ha^{-1} was done with enrichment of biofertilizers (Azotobactor & PSB) and *Trichoderma viride* @ 5 kg ha^{-1}. 'Naturamore Gold' an organic product applied @ 25 kg ha^{-1} in standing crop for nitrogen supplement. For integrated pest and disease management insect attractants, biopesticides and neem-based formulations were used. The results of the study revealed that the green yield of chilli was 34.2 per higher in organic production system (8.75 t/ha) as compared to farmers practice (6.52 t/ha). Among the diseases, average incidence of wilt was noted 2.75 percent in the technological interventions against 6.75

percent in farmer's practice, however anthracnose disease in the study fields was quite less (1.25%) during study period. Pod borer and sucking pest incidence recorded 0.17 larvae plant^{-1} and 7.5 plant^{-1} respectively under organic chilli production over FP (0.56 larvae plant^{-1} and 15.25 plant^{-1}). Organic production of chilli contributed increased net return of Rs.1,54,025 ha^{-1} and benefit cost (B:C) ratio (3.38) over farmer's practices where these were recorded Rs. 78,375 ha^{-1} and 2.51respectively.

ORGANIC CULTIVATION OF BROCCOLI IN SAGAR DISTRICT OF MADHYA PRADESH

S. L. Waskel* and A.K. Tripathi

JNKVV, Krishi Vigyan Kendra, Sagar-II (MP)

**Corresponding author:* sukhlalwaskel98@gmail.com

Broccoli (*Brassica oleracea* var. *italica*) has been described as a vegetable with a high nutritional value due to its important content of vitamins, antioxidants, anti-carcinogenic compounds, and health-promoting phytochemicals. Broccoli is similar to cauliflower in growth and harvest time, but it is characterized by its dark green color. Broccoli is an important vegetable among the cultivated cruciferous plants. It is prone to fewer pests and diseases than cauliflower, hence broccoli requires less pesticides.

On farm trials was conducted to assess the economic feasibility of organic cultivation of Broccoli (*Brassica oleracea* var. *italica*) in Sagar district under Bundelkhand region of Madhya Pradesh during 2021-22 to 2022-23 in participatory mode at farmers' fields. Among the organic nutrient sources, basal application of FYM @ 05 tonne and vermicompost @ 2.5 tonne was done with enrichment of biofertilizers (Azotobactor & PSB) @ 5 kg ha^{-1}. "Sagarika" an organic product applied @ 50 kg ha^{-1} in standing crop for nitrogen supplement. For integrated pest and disease management insect attractants, biopesticides and neem-based formulations were used. The results of the study revealed that the yield of Broccoli was 17.4 per higher in organic production system (245 q/ha) as compared to farmers practice (212 q/ha). Insect incidence recorded lower under organic Broccoli production over FP. Organic production of Brocchali contributed increased net return of Rs.68,400 ha^{-1} and benefit cost (B:C) ratio (3.26) over farmer's practices where these were recorded Rs.54,750 ha^{-1} and 2.84 respectively.

ORGANIC FARMING A SUSTAINABLE VENTURE: SUCCESSFUL CASE STUDY OF EXTENSION INTERVENTIONS

Jagannadha Raju Dandu[1*], Sri. Ravi Varma Kalidindi [2] and Praveen[3]

[1]Ph.D (Extn. Edn.); PGDPR, PGDJ, FISEE, [2]B.Tech. (USA), [3]Ph.D. (Hort.)

**Corresponding author: prof.d.j.raju@gmail.com*

Organic Farming is a very specialized Farming demands the Farmer and Extension persons be trained fully first and should be knowledgeable all in's and out's of it fully. Then only the organic farming becomes a kik start. It will further sustain if farmer is having strong un-shattered will-power and determination to do so, irrespective of day to day problems, more so in doing multiple cropping. Farmer should be able to take care of his financial resources and support well in advance including keeping and managing skilled personnel at field level. Continued technical support is very important with highly knowledgeable extension personnel. Ultimately encouraging marketing avenues makes Organic Farming a Sustainable Venture.

These were the outcome of a case study of an organic Farming of Kalidindi Ravi Varma of an IT Professional working in America and doring Organic Farming in Gokavanipalem Village of Kasimkota Mandal of Anakapalli District of Andhra Pradesh State. Out of interest in Organic Farming he has purchased 20 acres land here during 2018 and has started organic farming in Mango, Cashew, Coconuts, Seethaphal etc. Crops when the Farmer was given our option to choose some crops like Papaya, Banana & Vegetables which demands high dose of Fertilizers and irrigation, Farmer has preferred all these crops except Fertilizer application. Such will power is important.

Resources wise he is taking care of it time to time without any hesitation. He has removed even unskilled labourers working there and started with all new approach. In spite of zero returns so far, he could withstand well and his patience was immense with the day to day field problems. Technical support is continuously provided by me in handling different crops in getting seeds, planting materials, bio-fertilizers etc. from the nearby Research Stations, now and then Scientists visits were compelled to get it from the nearby KVK.

ROLE OF EXTENSION IN PROMOTING ORGANIC FARMING

Jayprakash H. Gaikwad

Associate Professor, College of Agriculture, Dhule

Dist- Dhule Maharashtra State

Corresponding author: jh_gaikwad@rediffmail.com

Organic farming is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way as to keep the soil alive and in good health by use of organic wastes (crop, animal, farm and aquatic wastes) and other biological materials along with beneficial microbes (bio fertilizers) to release nutrients to crops for increased sustainable production in an eco-friendly pollution free environment. Organic farming aims at sustaining and increasing the productivity by improving the soil health and overall improvement of agro- ecosystem. Not only address the quality and sustainability concerns, but also ensures a debt free, profitable livelihood option for the farmers. FAO suggested that "Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health including biodiversity, biological cycles and soil

biological activity and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs".

Organic agriculture has potential to make agriculture sustainable, protect environment and prevent or reduce the adverse impact of climate change. Organic agriculture including organic livestock and poultry production as an emerging system of food production is expanding rapidly around the world. Over 2.8 Million producers grow organic foods in 69.8 Million ha land across 186 countries with $97 billion global market for organic products. Over 103 countries now have an organic legislation. In terms of number of producers, India continues to be number one in the world with nearly one million organic producers. As on 31st March 2020, total area under organic certification process (registered under National Programme for Organic Production) was 3.67 million Hectare (2019-20). India produced around 2.75 million MT (2019-20) of certified organic products which includes all varieties of food products. The total volume of export during 2019-20 was 6.389 lakh MT. The organic food export realization was around INR 4,686 crore (689 million USD). Organic products are exported to USA, European Union, Canada, Switzerland, Australia, Japan, Israel, UAE, New Zealand, Vietnam etc. The production is not limited to the edible sector but India also produces organic cotton fiber, functional food products etc. (APEDA, 2020).

The Extension & Advisory Services (EAS) can develop right understanding about organic agriculture among the producers and consumers. We need science based approach to further develop organic agriculture by generating organic technologies through research. We need to demonstrate, organic agriculture is sustainable to wider community across the world. We can do it by doing more research, developing relevant technologies and effectively transferring the technologies to the interested farmers, processors and other stakeholders in the organic value chain. The existing extension systems and personnel are not trained to organic agriculture production systems, so they lack capacities, often making it difficult for them to guide farmers on organic production practices. So, the Extension & Advisory Services (EAS) first need to enhance their own capacities on organic agriculture. Extension strategies may help promote and develop organic farming like 1. Capacity building of extension services providers on organic production. 2. Capacity building of farmers and processors on organic farming methods. 3. Developing package of practices for organic production & processing of crops, livestock, poultry and fisheries. 4. Setting up organic demonstration units, documenting successes stories of organic farmers for sharing through different extension media including social media platforms. 5. Creating mass awareness on benefits of consuming organic products to boost organic production and markets.

THEME 2

Comprehensive Extension Strategies for the Promotion of Natural Farming

EXTENSION STRATEGIES FOR SCALING UP NATURAL FARMING

Ayush Mishra[1*] and Joginder Singh Malik[2]

[1]Ph. D. Scholar and [2]Professor

Department of Agricultural Extension Education, CCS HAU, Hisar-125004

**Corresponding author: mishra13ayush@gmail.com*

Increasing productivity per unit of land, eliminating rural poverty through a socially inclusive policy, and addressing food security demands are the three main issues facing India's agriculture sector. Population growth has led to the use of more and more marginal areas for agriculture, which has accelerated the degradation of natural resources, especially soil, which primarily takes the form of land where the soil layer has been removed and nutrients have been continuously extracted with little to no replenishment. In order to solve the current limitations and use relevant technologies for enhanced and sustainable agricultural output, proper actions are therefore required. Certain creative low-input farming techniques have protected the resource base while increasing harvests. Natural Farming is one such method that can help attain sustainability in agricultural sector. Natural farming aims to increase farmer's yield by maximizing production factors (labour, soil, equipment) and by avoiding the use of non-natural inputs (fertilizer, herbicides and pesticides) to optimize production potential and thus provide abundant, high quality, healthy food at the best price. The golden rule is to enrich the level of organic matter into the soil, which supports microbial life, and therefore the soil's fertility. The natural farming also known as eco-agriculture, is considered even superior to organic farming in the sense that the former does not lay emphasis on ecosystem function and wild biodiversity conservation. The eco-agriculture increases agricultural production and simultaneously restores biodiversity and other ecosystem functions, in a landscape or ecosystem management context. With emerging farming models, researchers and extension personnel/other experts can develop adoption strategies with the farm community while fully incorporating their beliefs. The chances of adopting introduced farming practices have a higher probability of success with a community participatory approach and emphasis on shared value systems.

SCALING UP NATURAL FARMING THROUGH STRATEGIC EXTENSION INITIATIVES BY KRISHI VIGYAN KENDRAS

Nazir Ahmad Mir[1*], Tariq Sultan[2], Tahir Saleem[2] & Hilal Ahmad Malik[2]

[1]Krishi Vigyan Kendra Bandipora-II (Gurez), [2]Krishi Vigyan Kendra Bandipora-I

**Corresponding author: mir643@gmail.com*

Krishi Vigyan Kendras act as a hub for transfer of research and development by conducting field trials and studies to validate and optimize natural farming practices. Collaborative efforts of Krishi Vigyan Kendras with agricultural research institutes and universities contribute to the scientific validation of these practices which further aid in boosting the confidence of farmers who are transitioning to natural farming methods. Krishi Vigyan Kendra Bandipora, Jammu and Kashmir, has played crucial role in promoting sustainable and natural farming practices in form of trainings and capacity building, technology transfer, demonstrations & local adaptation. Many Awareness programmes were conducted to educate farmers about the principles and techniques

of natural farming practices. On-farm demonstrations were conducted to validate and showcase the effectiveness of natural farming methods in the local climatic and topographic context beside this testing and promoting indigenous and traditional farming practices that are well-suited to our region which is mainly constituted of hill topography. Kendra is also handholding farmers for formation of Farmer Producer Organizations or cooperatives, which will assist farmers to access premium markets and get certification of their natural farming produce.

NATURAL FARMING: A SOLUTION AND WAY TOWARDS SUSTAINABLE AGRICULTURE

Thaneshwar Kumar[1*], R. L.Sharma[2], N. K. Markam[3], Satyendra Gupta[4] and Pallavi Porte[5]

[1,4]Subject Matter Specialist, [2]SS&H, [3]Farm Manager, [4]SRF

Krishi Vigyan Kendra Mungeli, Indira Gandhi Krishi Vishwavidyalay, Raipur (C.G.)

**Corresponding author: thaneshward15@gmail.com*

Using conventional techniques in agriculture is like cancer to our soil and health, as well. It does not only make the soil barren but eventually, the farmer goes under debt. Hence, Natural Farming is the only way to deal with this ever rising problem. Natural Farming (NF) is contemplated by its protagonist as one of the most potential crop cultivation methods to drastically cut down production costs by reducing dependence on market for purchase of critical inputs. Being considered as an agro ecologically diverse farming practice, it brings ecological and social benefits. Healthy soil is the foundation upon which sustainable agriculture is built. Farming practices differ mainly based on soil inputs and crop protection measures. In conventional chemical farming practices, indiscriminate use of chemical fertilizers and pesticides destroy the beneficial soil micro flora, change the soil nature and also contribute to the high crop production cost. Heavy metals from the polluted soil may enter the food chain in significant amounts and show adverse health effects. The essence of natural farming is to minimize the external inputs to the farm land and nurture the soil fertility. It was shown that enrichment of soil occurs through propagation of beneficial soil microbes. It encourages the natural symbiosis of soil micro flora and crop plants. Natural farming means farming without using any credit, and without spending any money on purchased inputs such as fertilizers and pesticides. In natural farming farmers use mulching, soil protection techniques, natural pesticides and fertilizers. The principal methods of natural farming has basically four pillars Jivamrita, Bijamrita, Acchadana (Mulching) and Whapasa.

PROMOTING NATURAL FARMING AS ALTERNATIVE SYSTEM OF FARMING FOR COST REDUCTION AND ENHANCING INCOME

Sarita Singh

Scientist, KVK Chhindwara (M.P.)

Corresponding author: drsaritasingh10@gmail.com

Natural Farming Bhartiya Prakratik Krishi Paddhati (BPKP) is aimed at promoting traditional indigenous practices which gives freedom to farmers from externally purchased inputs. Natural Farming is largely based on biomass mulching, round the year green cover, multi-species green manuring, use of on-farm desi cow dung-urine formulations (such as Bijamrit, Jivamrit, Ghanjivamrit

etc) for nutrient and soil fertility management, use of diversity, multi-cropping systems and on-farm made botanical extracts for plant protection and maintaining soil aeration in exclusion of all purchased synthetic chemical inputs directly or indirectly. As natural farming is aimed at reduction in cost of cultivation and providing freedom to farmers from purchased inputs, use of external purchased inputs including organic, biological or otherwise are also avoided. Natural Farming mainly relies on adoption of diversified multi-cropping systems, desi cow based on-farm inputs for nutrient and soil enrichment and various botanical concoctions for plant protection. These were initially thought to be main pillars and promoted as components of natural farming. However, the practices have evolved with time and farmers are also using innovations like Pre Monsoon Dry Sowing (a method of multi-species green manuring), Green manuring and applying Farm Yard Manure (FYM), vermi-compost, etc. along with the desi-cow based components of natural farming. In some areas farmer groups have come forward and are preparing desi cow derived inputs for natural farming and making it available to other end using farmers who don't own livestock.

PERCEPTION OF THE FARMERS ON ZERO BUDGET NATURAL FARMING IN PRAKASAM DISTRICT OF ANDHRA PRADESH

O. Sarada[1*] and G. V. Suneel kumar[2],

[1]Principal Scientist (Extn) and [2]Senior Scientist (Ento) RARS, Lam, Guntur

**Corresponding author: o.sarada@angrau.ac.in*

The study investigated farmers' perception on Zero Budget Natural Farming (ZBNF) in Prakasam District of Andhra Pradesh with the specific objectives of assessing over all farmers' perception, the determinants of their perception, sources of information for ZBNF, constraints in practicing ZBNF and suggestions for sustainable ZBNF adoption. Sixty farmers practicing ZBNF were purposively selected from ten ZBNF clusters of Prakasam District. The data collected were analyzed using frequency counts, percentages and correlation analysis. Majority (65.00%) of the farmers had medium perception on ZBNF followed by high (18.33%) and low (16.67%). Great majority (86.67%) of the farmers agreed that soil will be enriched with ZBNF, quality production is possible with ZBNF, ZBNF increases micro organisms and earth worms in soil (80.00%), facilitates natural enemies population (68.33%), is complex to adopt (63.33%), weed management is difficult (55.00%) and ZBNF is difficult to practice (53.33%). But they were disagreed that adoption of ZBNF on large scale is possible (55.00%) and purchasing and maintaining traditional cows is difficult (51.67%). The major sources of information were trainings attended by the farmers on ZBNF (91.67%), Community resource persons (90.00%), Department of Agriculture (88.33%), practicing farmers (73.33%) and through television (51.67%). Trainings undergone, ZBNF experience, innovativeness, education and extension contact were the variables having highly significant positive relation with farmers' perception at 0.01% level. The major constraints expressed by the practicing ZBNF farmers were non availability of ZBNF inputs (81.67%), lack of information on preparation and use of asthras (76.67%), low yields in initial years (75.00%), weed management (68.33%), preparation of asthras is difficult (63.33%) and intensive labour requirement (53.33%). The ZBNF farmers have suggested that creating awareness among farmers (78.33%), application of asthras through fertigation (71.67%), making ZBNF inputs locally available (63.33%) providing market support for ZBNF produce (58.33%) and giving wide publicity on the benefits of ZBNF (51.67%) would facilitate its large scale adoption.

EVALUATING THE IMPACT OF ZERO BUDGET NATURAL FARMING: A PATH TO SUSTAINABLE AGRICULTURE IN INDIA

Bhumika Singh Lodhi[1*], Arzoo Dhakad[2], Pramod Kumar[4] and Amit Kumar Jha[4]

[1&2] Research Scholar, Department of Plant Breeding & Genetics, JNKVV, Jabalpur

[3]Research Scholar and [4]Assistant Prof., Department of Agronomy, JNKVV, Jabalpur

**Corresponding author: bhumikasinghlodhi16@gmail.com*

India's agricultural sector, deeply rooted in the nation's history and socio-economic structure, remains an indispensable component of its growth narrative. Yet, conventional farming methodologies, characterized by their dependence on intensive chemical inputs, have raised multifaceted concerns. Environmental repercussions such as groundwater contamination, soil degradation, and biodiversity loss underscore the pressing need for sustainable alternatives.

Zero Budget Natural Farming (ZBNF) emerges as a potential solution in this context. This traditional farming approach champions the minimization of external inputs, emphasizing the utilization of natural, indigenous resources to rejuvenate agricultural practices. Through the lens of diverse studies from different Indian regions, this review offers a holistic assessment of ZBNF's impact. Key findings illustrate ZBNF's role in enhancing soil microbial activities, promoting nutrient recycling, and fostering a symbiotic relationship between the soil and crops. Furthermore, the application of natural formulations like "Jeevamrit" stands as a testament to ZBNF's potential in bolstering soil biology.

However, the journey of ZBNF is not devoid of challenges. While its environmental benefits at the farm level are consistently documented, the economic advantages presented by ZBNF often vary, necessitating a nuanced analysis. Additionally, the drive towards ZBNF underscores the vital need for scientific validation, policy advocacy, and grassroots-level farmer training to ensure its sustainable adoption. In, synthesizing these insights, this review underscores the transformative potential of ZBNF in redefining India's agricultural paradigm, striking a harmonious balance between ecological conservation and economic progress.

EFFECT OF NATURAL FARMING PRACTICES IN HORTICULTURAL CROPS AND IT'S IMPACT ON CROP YIELD AND FARMER'S INCOME

R. S. Negi[*], Akhilesh Jagre, Ajay Chaurasiya and Ashok Sharma

Deendayal Research Institute, Krishi Vigyan Kendra, Satna

**Corresponding author: kvksatna@dri.org.in*

Natural Farmingis now emerging as one of the most potential sustainable alternative crop cultivation method to drastically cut down production costs by reducing dependence on market for purchase of critical inputs. In order to better understand the practice followed in Natural farming as well as the cost saving and income gain under Natural Farming practice, the study was undertaken at instructional farm of KVK Satna during the year 2020-21 and 2021-22 to evaluate the comparative efficacy of different components of natural farming in potato, tomato, turmeric and cabbage. Results revealed that the mulching with plash leaves and blackgram straw in potato resulted in

27.77 and 11.62 % increase in yield over control respectively. Similar results were observed in Turmeric where application of *Jeevamrit* and mulching gave 12.46 % higher yield over control. In tomato crop, application of recommended dose of fertilizers (NPK 120:80:90) + foliar application of *Jeevamrit*(0.3%) at 15 days interval 30 days after transplanting resulted in 12.43 % higher fruit yield as compared to application of RDF alone. However, application of *Jeevamrit* alone reduced the yield by 5.62%. In intercropping cabbage + pea and cabbage + fenugreek system of intercropping recorded maximum yield of 262.85 and 263.65 q/ha respectively, which were 21.67 % and 22.03 % more over sole cropping of cabbage (216.04 q/ha). Significant reduction in cost of cultivation of all the crops was observed. However, it is difficult to conclude the effect of natural farming practices on crop yield with two-year data. More, multi location studies are needed to scientifically validate the long term impact and viability of natural farming practices before it is promoted country wide on large scale. Yield advantage was visible under mulching and intercropping. Based on the results it could be concluded that the application of *Ghan jeevamrit* liquid *jeevamrit* along with mulching and intercropping with leguminous vegetables proved to be more effective and productive.

PEST MANAGEMENT SOLUTIONS WITH INTEGRATED TACTICS AND NATURAL FARMING

Sagar Pandey*, A. S. Rajput and Deepmala Lakra
**Corresponding author: sagaranand687@gmail.com*

Pests are a constant threat for farmers. They can reduce the yield or quality of a crop, or in the worst cases wipe it out altogether. For farmers who already struggle to achieve a sustainable livelihood, this can be devastating, which is why the first reaction of most farmers worldwide is to use pesticides to eliminate pests, or even as a prevention method. It is estimated that every year between 20 and 40 percent of global crop production is lost to pests. Consequently, the quantity of pesticides used worldwide has risen 50-fold since 1954. Approximately 3.5 billion kg of pesticides are applied globally each year, with no significant decrease in crop losses recorded. Among these pesticides, many are classified as "highly hazardous", and can pose serious human health problems in both the short and the long term. Effects of pesticides on the environment are also serious. Impacts include biodiversity loss, as well as soil degradation and pollution. Certain pesticides can persist in the environment for decades, and pose a threat to the entire ecological system on which food production depends. For all these reasons, the assumption made by many farmers that pesticide use leads to higher productivity and profitability is not so clear-cut. Research shows that pesticide use could be cut by 40 percent without effects on productivity. Generalizations in this regard are difficult, but there is a consensus among researchers that increasing pesticide use does not necessarily increase productivity and profitability. A practical and very often a cost-effective answer to reduce the reliance on pesticides and its negative consequences is integrated pest management (IPM). IPM is an ecosystem approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides. It is defined by the Food and Agriculture Organization (FAO) as "the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment."

MANAGEMENT OF INSECT PESTS UNDER NATURAL FARMING

Sagar Pandey*, A. S. Rajput, Savita Rajput, Pradeep Kashyap and Deepmala Lakra
**Corresponding author: sagaranand687@gmail.com*

In the green revolution era, the synthetic insecticides were used comprehensively to shield crops from various insect-pests. The justification behind using pesticides is that with the intensive agriculture, the problems of insect-pests are taking complex shape and posing serious challenges. So, the use of pesticides during last few decades has emerged as one of the indispensable agro-inputs to combat insect-pests and concurrently increase crop yields. But scientific surveys and evidences indicate a number of perils associated with the use of such chemicals. Their over and imprudent use lead to resistance in pests, killing of various beneficial organisms like fishes, birds, wildlife, honey bees, pollinators and microbes, poisoning to agricultural farm workers associated with application and spraying of chemicals, contamination of soil, air, surface and ground water, biomagnification of toxicants in food chains, residues in food and feed stuffs and much more. To conquer the deleterious effects of chemical based farming, a more sustainable and innocuous system of farming is required which can reduce the reliance on external inputs and concomitantly take care of the ill effects of pesticides and enhance farm income. Natural farming as suggested by Shri Subhash Palekar, Padma Shri Awardee in 2016, is a viable and sustainable option. In natural farming, insect-pests on plants are managed by the farmers with natural products prepared easily by them from local resources at almost negligible cost. Palekar has emphasized two pronged strategies for plant protection, one of initial protection through seed treatment and second through their use as spray. The naturally prepared and nature-friendly mixtures or astras shall keep the crop free from insect-pests and also take cognizance of the venomous effects of pesticides.

THE ROLE OF COW URINE IN ORGANIC AND NATURAL FARMING

Ankit Kumar Tiwari[1*] and Ankur Dwivedi [2]
Research Scholar, A. H. & Dairying, (LPM) Faculty of Agriculture,
MGCGV, Chitrakoot Satna (M.P.)
**Corresponding author: ankittiwari57848@gmail.com*

Cow urine consists of microflora, which is beneficial for plant growth as it contains microbes that show antimicrobial activity, thus improving soil fertility, soil productivity, and soil quality. The filtrate improves soil texture and structure. During the last two decades, there has been a significant sensitization of the global community to look into environmental conservation and safe food. Organic Farming (OF) is now becoming the main stream all over the world. The indiscriminate use of agrochemicals since green revolution resulted in adverse effect on the soil fertility, crop productivity, quality of produce and more, specifically on the environmental system. The current scenario under such situations firmly emphasizes the need to adopt eco-friendly agricultural practices for food production by considering the sustainability of soil and environment. The use of cow urine can be considered as a bw cost agricultural practice or bw cost farming for farming communities and has been extensively used in traditional agriculture in India for medicinal and agricultural purposes since Vedic period. Cow Urine plays a vital role in cow based natural or organic farming. It is very important for making of different liquid organic manures or bio enhancers like Panchagavya, Jeevamrutand

Beejamrut etc. In addition, Cow urine is used for making different Asthras for pest management like Agniastra, Brahmastra and Neemastra.

THE ROLE OF COW DUNG AS A BIO RESOURCE FOR SUSTAINABLE DEVELOPMENT

Ankur Dwivedi[1*] and Ankit Kumar Tiwari[2]

Research Scholar, A.H. & Dairying, (LPM)Faculty of Agriculture

MGCGV, Chitrakoot Satna (M.P.)

**Corresponding author: ad463738@gmail.com*

Cow dung is a cheaply and easily available bioresource. Many traditional uses of cow dung—such as burning it as fuel, using it as a mosquito repellent and as cleansing agent are already known in India. Cow dung harbours a diverse group of microorganisms that is beneficial to humans due to its ability to produce a range of metabolites. Along with the production of novel chemicals, many cow dung microorganisms have shown a natural ability to increase soil fertility through phosphate solubilization. Nowadays, there is an increasing research interest in developing cow dung microorganisms for biofuel production and management of environmental pollutants. This review focuses on recent findings being made on cow dung that could be harnessed for usage in different areas, such as medicine, agriculture, and industry.

EXPERIENCING FARMER-TO-FARMER LEARNING IN NATURAL FARMING

Sarvesh Kumar[1*] and Mukesh Kumar Bankoliya[2]

[1]Scientist (Agricultural Extension & Rural Sociology) and [2]PA (Plant Protection)

JNKVV-KVK, Harda

**Corresponding author: sarveshkvkharda@gmail.com*

Today's agriculture has been alarming by adopting indiscriminate using pattern of agrochemicals in crops by farming community in India. There are several experiences and events are emerging everywhere related to cancer and other human ailments and diseases and disorder among human due these residual chemical doses taken by people as green vegetables, spices like chilies and pulse crops especially. Although animal milk to human milk each of is not free from chemical causing hazardous responses among newly born babies and feeding people. Keeping these views, the organic and natural farming concept is being the only way to fight these present and future threats for humanity. The natural farming is a chemical-free farming system rooted in Indian tradition enriched with modern understanding of ecology, resource recycling and on-farm resource optimization. It is considered as agro ecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity. It is largely based on on-farm biomass recycling with major stress on biomass mulching, use of on-farm cow dung-urine formulations, maintaining soil aeration and exclusion of all synthetic chemical inputs. Natural farming aims at restoring soil health, maintenance of diversity, ensure animal welfare, stress on efficient use of natural/local resources and promote ecological fairness. The natural farming includes-No external inputs, Local seeds or use of local varieties), On-farm produced microbial formulation for seed treatment (such as bijamrita),

On-farm made microbial inoculants (Jivamrita) for soil enrichment, cover crops and mulching with green and dry organic matter for nutrient recycling and for creating a suitable micro-climate for maximum beneficial microbial activity in soil, Mixed cropping, Managing diversity on farm through integration of trees, Management of pests through diversity and local on-farm made botanical concoctions (such as neemastra, agniastra, neem ark, dashparni ark etc), Integration of livestock, especially of native breed for cow dung and cow urine as essential inputs for several practices and Water and moisture conservation. The efforts were made by KVK scientists in Harda district to motivate famers and farmer to farmer extension strategies for enhancing area under natural farming in Harda district. At preset many farmers who were motivated are sharing information each other and received natural farming methodology through farmer to farmer extension system and they have been established as natural growers in Harda. These farmers are receiving social honour and better price of their naturally grown produce then to other farming community and found happy and more satisfied economically, healthy life.

NATURAL FARMING: A RECONNECTION WITH NATURE

Nirjharnee Nandeha[1*], Satish Kumar Verma[2] and Kunal Chandrakar[1]

[1]SMS and [2]Senior Scientist & Head

Krishi Vigyan Kendra, Mahasamund, IGKV, Raipur, Chhattisgarh

**Corresponding author: nirjharneenandeha04@gmail.com*

Natural and organic farming, as well as chemical-free farming, rely on ecosystem management and aim to reduce or eliminate external agricultural inputs, particularly synthetic ones. It has been determined that increasing agri-production through the intense use of pesticides, fertilisers, and other inputs is necessary to meet the growing population's food needs. On the other hand, the careless use of chemical inputs has seriously endangered human life. Finding a balance between producing enough food (400 million tonnes) for India's estimated 1.66 billion people by 2050 and ensuring that it is safe, healthful, high-quality, and environmentally sustainable is a difficult issue. In order to provide high-quality food without harming the environment, alternative agricultural approaches such as conservation agriculture, carbon positive farming, organic farming, natural farming, and regenerative agriculture have been acknowledged as viable alternatives to traditional farming. However, the term "natural farming" has come to refer to a concept of chemical-free, diversified agriculture-based farming practices that place more emphasis on affordable native resources and management techniques. Natural farming minimises or avoids the use of inputs that are purchased externally and emphasises the use of native resources with agro-ecological principles, community participation, and common resource management for the benefit of farmers and the larger farming community. India has been making concentrated efforts for the past ten years to help many stakeholders adopt science-based natural agricultural practices by fostering the correct mindset. Without affecting the supply of food, India may safely switch 2% of its farmed land annually from conventional farming to organic or natural farming (ONF). By 2030, it may replace about 20% of its conventional farming land with ONF. Agro-ecological technologies, particularly those based on ONF, are allowing rapid changes in food production systems worldwide, offering small farms appealing options due to their premium price tag and high-quality supply of organic inputs. However, the key elements that will determine the widespread acceptance of natural farming are the poor yield, nitrogen deficiency, and the rate and scope of ecosystem services impact on food security and profitability. The necessity, current state, initiatives, research findings with case studies, tactics, and problems related to natural farming in India are all covered in this study.

ADOPTION AND IMPACT OF NATURAL FARMING PRACTICES ON CROP YIELD AND ENHANCEMENT IN FARMERS' INCOME IN BIHAR STATE OF INDIA

B. C. Anu*, M. L. Meena, A. Nalia and M. S. Kundu

Krishi Vigyan Kendra, Turki, Muzaffarpur (Bihar) 844127

Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur (Bihar) 848125

**Corresponding author: anubcanant2@gmail.com*

Natural Farming (NF) is contemplated by its protagonist as one of the most potential crop cultivation methods to drastically cut down production costs by reducing dependence on market for purchase of critical inputs. Being considered as an agro-ecologically diverse farming practice, it brings hosts of ecological and social benefits, although, there are two school of thoughts- opposing each other on the efficacy of its practices. In order to better understand the practice followed in NF as well as the cost saving and income gain by the NF farmers, the study was undertaken in the states of Bihar during January-June 2022 covering 120 NF-adopting farmers and 120 non-NF farmers in Bihar, respectively. Though there are certain practices prescribed in natural farming, the most adopted practice is use of Jeevamritha, Beejamritha and other plant protection materials. Further, there is always scope for tweaking and innovation in these practices like Ghanajeevamritha, use of Azolla in paddy field or applying Jeevamritha through drip irrigation. Significant reduction in cost of cultivation of all the crops was observed. However, the effect on crop yield is not conclusive. NF-farmers in Muzaffarpur district harvested better yield in finger millet, but lower yield in paddy and wheat. While in Kurhani block, yield advantage was visible in paddy. It was also observed that the NF-adopted farmers who applied farm yard manure harvested better crop yield than those who did not apply. Thus, natural farming may not look as yield enhancing farming practices, but definitely increases farmers' income through cost reduction and long-term sustainability. The findings of the study examined the extent of level of adoption of four wheels of natural farming-jeevamritha, beejamritha, mulching and wapsa among the NF-adopted farmers. Jeevamritha improves soil fertility by stimulating microbial activity to make nutrients plant-available and increase soil. Jeevamritha is a fermented microbial culture used as an alternative to chemical fertilizer. It is prepared by adding 10 kg of cow dung, 10 litres of cow urine, 2 kg of jaggery, 2 kg of pulse flour, a handful of undisturbed soil added to 200 litres of water. It is fermented for 48 hours by stirring twice in a day. It is prepared in a drum and applied in the fields through flooding along with irrigation and/or by spraying. It is applied in the field 2-3 times during the crop season. In Muzaffarpur, NF-farmers are also preparing ghanajeevamritha, which is a solid dried ball. The farmers are mainly preparing ghanajeevamritha during the off season and are applying in the field before sowing. It consists of cow dung, cow urine, jaggery, chickpea flour which is dried under shade and stored up to six months. Beejamritha is a microbial treatment used for treating the seeds, plant saplings by the farmers. It is prepared by the farmers using 5 kg of cow dung, 5 litres of cow urine, 50 gm of lime and 20 litres of water.

EFFECT OF NATURAL FARMING COMPONENTS ON POPULATION OF MICROBES IN CHEMICAL AND NATURAL FARMING PLOTS IN BETUL

Megha Dubey*, V. K. Verma, Sanjeev Verma and M .P. Ingle
Krishi Vigyan Kendra, Betul
**Corresponding author: meghadubey33@yahoo.com*

The application of chemical fertilizers is effecting the microbial population of soil. The physical, chemical and biological properties are effected by the activities of microbes. It is observed that the chemical fertilizers and implements are damaging the structure of soil and making it compact. The use of natural farming components like ghanjevamrit, jevamrit, neemastra, dashparni, mulching and wapsa is improving the quality of soil by improving the microbial status of soil. Bacterial and fungal inoculation have a potential to reinstate the fertility of degraded land through various processes. These microorganisms increase the nutrient bioavailability through nitrogen fixation and mobilization of key nutrients (phosphorus, potassium and iron) to the crop plants while remediate soil structure by improving its aggregation and stability. Success rate of such inocula under field conditions depends on their antagonistic or synergistic interaction with indigenous microbes or their inoculation with organic fertilizers. The experiment was conducted at 8 farmers field to study the effect of natural farming components on population of microbes in chemical and natural farming plots in Betul during the Rabi season 2023.The application of natural farming components has increased the growth of bacteria and fungi in demonstration plots as compared to chemical treatment plots in the crops like chickpea, tomato, wheat and mustard. The application of ghanjevamrit, jevamrit, mulching and dashparni has improved the microbial status in all the demonstration plots during 2 consecutive years.

EFFECT OF NATURAL FARMING COMPONENTS ON YIELD PERFORMANCES, ECONOMICS AND SOIL HEALTH IN NATURAL FARMING DEMONSTRATION PLOTS IN BETUL DISTRICT OF MADHYA PRADESH

Megha Dubey*, V. K. Verma, R. D. Barpete and Sanjay Jain
Krishi Vigyan Kendra, Betul
**Corresponding author:* meghadubey33@yahoo.com

The experiment was conducted at 8 farmers field to study the effect of natural farming components on yield, economics and soil properties in chemical and natural farming plots in Betul district of Madhya Pradesh during the Rabi season 2023. The result indicated that, the application of natural farming components has increased the growth of chickpea, wheat, mustard and tomato in demonstration plots as compared to chemical treatment plots. Also, the application of ghanjevamrit, jevamrit, mulching and dashparni has improved the microbial status in all the demonstration plots. It was also found that, the soil properties have improved with the increase in the microbial growth. It was observed that the cost of cultivation has been reduced in the natural farming plots and the microbial growth has also increased in theses plots.The growth of bacteria and fungus has improved while the properties of soil has also improved.The application of Jevamrit at the interval

of 21,41,61,81 days has resulted in excellent growth on tomato,mustard and chickpea plants. The application of mulching has helped in saving the irrigation water, supressing the weeds etc.

ASSESSMENT OF NATURAL FARMING IN ONION CROP AT FARMER FIELD IN SHIVPURI DISTRICT OF MADHYA PRADESH

M. K. Bhargava, Pushpendra Singh*, Y. C. Rikhadi & Puneet Kumar

RVSKVV-Krishi Vigyan Kendra, Shivpuri (M.P.)

**Corresponding author: psinghkvk@gmail.com*

Natural farming, a new concept of farming is a phenomenon of raising crops including field crop and horticultural crops with natural inputs like jeevamrit, ghanjeevaamrit, mulching and wapsa without use of any chemical inputs like fertilizers, Pesticides or any other chemical. An experiment as On-farm trial (OFT) was conducted by KVK Shivpuri at eight farmers fields during 2022-23 to assess the impact of natural farming on yield of onion. For this purpose, onion seedlings and one 200 liter capacity drum to produce jeevamrit were provided to farmers as critical input. Demo crop was grown without use of chemical inputs using only ghanjeevaamrit, beejamrit, eevamrit, mulching and wapsa. Yield recorded indicated that in demo plots, yield ranged from 253 q/ha to 275 q/ha with average yield of 264.63 q/ha while in control plots, yield ranged from 294 q/ha to 320q/ha with a average of 308.13 q/ha. Average yield decrease in demo plots was recorded as 26.90%. Economic performance of the trial also fell negative. However, it is a first time trial of its kind and it needs further testing to assess the effort on yield and quality of produce as well as soil health.

ADOPTION OF NATURAL FARMING IN SINGRAULI DISTRICT UNDER KYMORE PLATEAU AND SATPURA HILLS AGROCLIMATIC ZONE OF MADHYA PRADESH

Jai Singh[1*] and Akhilesh Kumar Chaubey[2]

Krishi Vigyan Kendra, Singrauli, Madhya Pradesh

**Corresponding author: sidhi_jai01@rediffmail.com*

Indian Agriculture has witnessed several technological led intensifications after. "Green Revolution" which transformed India from food scarce to food surplus country. Modern Indian agriculture means technological led agricultural intensifications has also led number of adverse impact i.e. soil degradation, degrading the ecosystem, rising cost of production, resulted diminishing the economic return of the farmers hence, Indian agriculture became in unremunerative.

Natural Farming is a chemical-free farming system rooted in Indian tradition enriched with modern understanding of ecology, resource recycling and on-farm resource optimization. It is considered as agro ecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity to reducing cost of cultivation through elimination application of fertilizers, pesticides from adopting application of Jeevamrit, Beejamrit, Mulching, Intercropping, Agniyastra, Neemastra, etc., It is considered as a cost- effective farming practice with scope for increasing employment and rural development.

To observe adoption rate of natural farming in the district, Krishi Vigyan Kendra, Singrauli had conducted a study to explore the adoption level of farmers regarding natural farming practices. In view of the objectives of the study, hundred trained farmers were selected through proportionate random sampling method from the trained farmers group. On the basis of study, it can be concluded that the adoption level of farmers regarding natural farming practices was medium in the district. This could be due to the exposure of the farmers to knowledge through training, awareness and exposure visit conducted by Krishi Vigyan Kendra, and department of Farmer Welfare and Agriculture Development, Singrauli.

HARMONIZING AGRICULTURE WITH NATURE: THE EVOLUTION TOWARDS SUSTAINABLE NATURAL FARMING

Pallavi Sonaniya[1*], Kratika Nayak[2], Sanjeev Sharma[1] and Kurru Charitha[1]

[1] Ph. D., Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior Madhya Pradesh

[2]Ph. D., Jawaharlal Nehru Krishi Vishwa Vidyalaya , Jabalpur Madhya Pradesh

**Corresponding author: pallavisonaniya.gpb@gmail.com*

Sustainable agriculture through natural farming embodies a paradigm shift in agricultural practices, emphasizing environmentally friendly methodologies to enhance crop yield, soil health, and ecosystem resilience while minimizing adverse impacts on the environment. This approach integrates traditional wisdom with modern scientific knowledge to cultivate crops in harmony with nature, leveraging ecological principles and biological processes. Key drivers for the adoption of sustainable agriculture through natural farming include the promotion of biodiversity, utilization of organic inputs, conservation of soil health, and the reduction of chemical inputs. Harnessing biodiversity through practices such as polyculture and intercropping enhances natural pest control, soil fertility, and resilience against climate variability. Additionally, employing organic inputs like compost, green manure, and biofertilizers fosters nutrient-rich soils, fostering robust plant growth while reducing dependence on synthetic fertilizers and pesticides. Furthermore, the conservation of soil health stands central to natural farming methodologies. Techniques like minimal tillage, mulching, and crop rotation mitigate soil erosion, improve water retention, and sustain microbial diversity crucial for nutrient cycling. These practices not only enhance agricultural productivity but also contribute to mitigating climate change by sequestering carbon in the soil. This abstract elucidates the multifaceted approach of sustainable agriculture through natural farming, showcasing its potential to revolutionize agricultural systems globally. Its integration of scientific knowledge with traditional wisdom offers a viable pathway to address contemporary agricultural challenges while ensuring long-term environmental sustainability.

STUDY ON RICE CULTIVATION UNDER NATURAL FARMING IN BALAGHAT DISTRICT OF MADHYA PRADESH

Ramesh Amule* and R. L. Raut

Krishi Vigyan Kendra Balaghat, JNKVV, Jabalpur

**Corresponding author: kvkbadgaon@rediffmail.com*

Natural farming is a holistic approach to agriculture that emphasizes the importance of working with nature to produce healthy food, keep the land healthy, and reduce the negative impact of farming on the environment. It is a sustainable and eco-friendly method of farming that eliminates the use of chemical fertilizers and pesticides, which can have harmful effects on the environment and human health. Natural farming has several benefits includes Improved yield, Increased farmer income, Better human health, Employment generation, Environment conservation, Reduced water consumption, Rejuvenated soil health etc.

The study was undertaken on ten farmers field in the Balaghat district, Madhya Pradesh during Kharif 2023 on Paddy crop. Under demonstration prescribed practices of natural farming applied on farmers field. Jeevamrit (200 lit/acre) used in standing crop through irrigation by 20 days interval 4-5 times. Ghanjeevamrit 100 kg/acre applied twice during crop season at 40 Days after transplanting and 60 Days after transplanting. Plant protection measures used for control of major pest (Stem borer, Brown Plant Hopper, Leaf folder etc.) i.e. Neemastra, Brahmastra and Dasparni Ark as per requirement and incidence of pests. Prakratik plant protection measures used as prophylactic measures. Significant reduction in cost of cultivation of all the crops was observed which was Rs. 34028/- per ha. in Chemical Farming and Rs. 29285/- per ha. in Natural Farming. However, the effect on crop yield is slightly lesser than control (Chemical farming) which was 44.84 q/ha in chemical farming and 43.86 q/ha in Natural Farming.Thus, natural farming may not look as yield enhancing farming practices, but definitely increases farmers income through cost reduction and long-term sustainability as well as other benefits of Natural farming.

EFFECTIVE MANAGERIAL APPROACHES FOR CULTIVATION THROUGH NATURAL FARMING

Vinay Prakash Bagde[1]* and Shikha Upadhyay[2]

Ph. D. Scholar, Department of Plant Breeding & Genetics,

Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (Madhya Pradesh), India.

**Corresponding author: bagde.vvmb@gmail.com*

Natural farming is an ancient farming method based on indigenous cows. Here the original and natural form of the soil is maintained. In natural farming, external inputs and chemical fertilizers are not used. In this the cost of crops reduces significantly.Foundation pillars of natural farming:- Beejmrit, Jeevamrit, water management, Mulching & Crop management. Beejamrit is used for seed treatment. To treat 100 kg seeds with beejamrit, 10-kg cow dung, 10-liters of cow urine, 20-liters of lime-water and 250-grams of soil. To make it, take a drum with a capacity of 50 liters of water. Add cow dung, urine, lime and soil in it. mix it well. After keeping this solution in shade for 24 hours, sprinkle the prepared solution on the seeds.The seeds can be air dried and sown after drying. Jeevamrit is a traditional organic liquid fertilizer which is prepared by mixing cow dung, cow urine,

jaggery, pulse flour, soil and water.It is considered an excellent source of natural carbon, nitrogen, phosphorus, potassium and other micro-elements.It is beneficial for both plants & soil.This solution works as anti-fungal and anti-bacterial spray.It should be used twice a month with irrigation water at the rate of 200 liters per acre as per availability.

Neemastra and Brahmastra.Neemastra is used to control sap sucking and small caterpillars. To make this, take 5-kg of neem leaves and crush it.Put this crushed leaves powder in 100-liters of water and add 5 liters of cow urine and add 1-kg of cow dung.Mix and cover and keep for an hour. After filtering the solution, it can be sprayed on the crop. Increase in fertility, weed control and soil control in natural farming and management of soil erosion:-Mulching: Mulching the remains of crops above the land surface is called mulching.This saves water and carbon from the soil does not evaporate, increasing the fertility of the soil.The cover collects moisture from the air and provides it to the plants, creating a micro-environment and increasing earthworm activity.Earthworms deposit their excreta on the surface of the soil.The excrement of earthworms contains 7 times nitrogen, 9 times phosphorus and 11 times potash etc. as compared to soil.In this way, natural farming is the coordination between microbes, cows, trees & plants in which they mutually help each other.

MANAGEMENT OF RICE BLAST *(PYRICULARIA GRISEA)* DISEASE THROUGH BIO-AGENT *PSEUDOMONAS FLUORESCENS*

K. S. Baghel*, Smita Singh, Rajesh Singh and A. K. Pandey

JNKVV- Krishi Vigyan Kendra, Rewa- 486001 (M.P.)

**Corresponding author:ksbaghel@jnkvv.org*

Rice is one of the main kharif crop of the Rewa district, it alone occupies more than 80% of total cultivable area in kharif season. Rice productivity was affected by several biotic and abiotic factors. Rice blast (*Pyricularia oryzae*) is one most destructive biotic factors and possess losses ranging from 40-60%. In present investigation OFT (On Farm Trials) was laid out at 3 different locations viz. Khadda, Chigwar and Godha village of Rewa district during year 2017-18 and laid out 10 trails at different locations to test and evaluate the technology at micro-level in the farmers field by applying *Pseudomonas fluorescens* a liquid formulation bio-product of JNKVV Jabalpur. There was a significant reduction in blast disease incidence just 4% against 24% in farmers practice. Similarly yield enhancement recorded by 36.33% and B:C ratio is 2.48 against 2.11 in farmers practice.

NATURAL FARMING PRACTICES IMPROVES SOIL QUALITY AND MICROBIAL POPULATIONS IN THE SOIL

R. K. Jaiswal*, P. N. Tripathi, R. P. Singh and R. Bagora

JNKVV, Krishi Vigyan Kendra Panna – 488 001 (M.P.)

**Corresponding author:kvkpanna@rediffmail.com*

Green revolution technology has been proved as a double-edged sword for the Indian agriculture system as well as for the entire globe. Although it intensified Indian Agriculture from a food scarce to a food surplus country, it has thrown several challenges in the form of declining factor productivity, depleting natural resources, low water and nutrients and adverse impacts on climate change as

well as on human health. Overuse of chemical fertilizers not only depletes soil nutrients but also reduces the yield and poisons the whole ecosystem. In the past several management practices such as biofertilizers/biopesticide application, use of vermicompost, FYM, etc. have been intended to mitigate the negative impact of chemical fertilizers and pesticides. Despite the continuous efforts of the scientific community, to date there is no proven method that can replace chemical based fertilizers/pesticides providing sustainable results. Although organic farming seems to ease the above mentioned effects by cutting greenhouse gas emissions (by 65%) and comforting climate change, it creates a challenge in the form of low productivity and a difficult certification process. Recently natural farming- an ancient and traditional farming technique has been reintroduced as a self-adequate solution that can help to address these concurrent issues.

In natural farming, the cost of farming activities from external sources (fertilizers/pesticides) is zero as it does not require any credit on purchasing inputs and crops are cultivated without chemicals exploiting natural resources such as cow dung/urine etc. Natural farming formulations such as Jeevamrit, Beejamrit and Panchgavya induce a multifold increase in microbial population and earthworm activity which enhances nutrient availability in soil, strengthens the resistance mechanism and increases crop productivity. The rich microbial community of soil microorganisms not only transforms the soil organic matter but also acts as source and sink of nutrients that can be used by plants and improve soil fertility as well as crop yield.

In view of this, Krishi Vigyan Kendra Panna conducted trials at 8 Farmer's and KVK fields during 2022-23 to evaluate the impact of natural farming practices viz. Beejamrit, Jeevamrit and Mulching on soil health and microbial populations in the soil along with crop production of the different crops. It is evident from the result that yield of different crops (wheat, chickpea, field pea and mustard) were decreased slightly however, B: C ratio was higher in demonstration field as natural farming reduces the cost of cultivation. Soil analysis revealed that status of organic carbon and microbial population (fungal and bacterial count) gradually increased in the natural farming fields. Thus, natural farming practices improve the soil health and microbial population in the soil.

KNOWLEDGE LEVEL OF FARMERS ABOUT NATURAL FARMING IN RAISEN DISTRICT OF MADHYA PRADESH

Swapnil Dubey*, P K Dwivedi and Alok Suryawanshi

Krishi Vigyan Kendra, Raisen (M.P.)

**Corresponding author: swapnildubey45@yahoo.com*

Zero Budget Natural Farming was first formulated by Maharastrian Agriculturist, Padmashri Subhash Palekar. The content of Natural Farming is *Beejamrit*, *Jivamrit*, *Ghanjivamrit*, Mulching and Vahapsa. The present study was conducted in Raisen district of M.P. during the year 2021-22. The knowledge level of farmer about natural farming practices by using simple random sampling techniques constituting a total sample size of 120 farmers. The study revealed that medium knowledge category was 42.00%. Whereas high knowledge was observed among 33.67 percent farmer followed by 24.33 percent farmers in low knowledge category. The knowledge of maintaining one indigenous *Deshi* cow for 30 acre natural farming was noticed by all the farmers. Majority of the farmers possessed the knowledge about the benefit of *Bijamrit* (83.33 %) followed by application of *Ghanjivamrit* (66.33 %) and *Jivamrit* (47.50 %). Regarding weed management all the farmers knew about hand weeding and inter culture operation. More than two third of farmer (65.17 %) had knowledge about that straw mulching with crop residues, grasses helps in managing

weeds. With respect to pest and disease management practices majority of the farmers (83.33 %) had knowledge about the application rate and time of application of *Neemastra* (80.00%). The knowledge of benefits of *neem* and its by products among farmers as traditional practice being in use. The observation on *Dashparni* use revealed that only 38.33 percent of farmers had knowledge about benefit of *Dashparni*.

AFTERMATH OF PACKAGE AND PRACTICES OF NATURAL FARMING IN YIELD, ECONOMIC INDICES AND SOIL FERTILITY STATUS IN FINGER MILLET AT BASTAR PLATEAU OF CHHATTISGARH, INDIA

Komal Singh Keram*, Birbal Sahu, Upendra Nag and Hemant Bhuarya

Krishi Vigyan Kendra, Kanker (IGKV), 494334, Chhattisgarh, India

**Corresponding author: keramsoils@gmail.com*

Natural Farming (NF) is contemplated by its protagonist as one of the most potential crop cultivation methods to drastically cut down production costs by reducing dependence on market for purchase of critical inputs. However, there is a lack of statistically evaluated data to support assertions of yield benefits of NF compared to organic or conventional alternatives, or to mechanistically account for them. In order to fill this gap, controlled field experiments were established in 8 farmer field during Rabi season 2022-23 to study the impact of package and practices (PoP) under NF in yield and Cost-Benefit ratio of Finger Millet (Ragi) production in sandy loam at Kanker district of Bastar Plateau agro-ecological zone of Chhattisgarh. In these experiments, we compared PoP of NF (*Beejamrit* for seed-treatment @ 1 L / 5 Kg seed, *Jeevamrit* (Liquid) @ 200 L ha^{-1}&*Ghanjeevamrit* (Dry) @ 250 Kg ha^{-1} for nutrient management and *Neemastra*, *Bhramastra*, *Aagneyastra*, *Panch-Dusparnietc.* @ 15-20L ha^{-1} as per protocol of application, comprising *desi* cow-dung-urine, lime, jaggery, pulse-flour/besan, forest soil, turmeric powder, green chilli and ginger paste and bitter taste leaves with straw-mulch) to existing conventional farming (CF) disregarded with no seed treatment and nutrient-crop protection management, all with no tillage. Comparisons were made in terms of yield economic indices, soil reaction, organic carbon and nutrient content. The results revealed that the average yield of finger millet was higher in the NF practices (14.25 q ha^{-1}), than the CF practices (10.38 q ha^{-1}) when all 8 farmer field experiments were analysed together. Similarly, the economic aspects of PoP under NF was more superior in terms of B:C ratio (1.45) and net income of Rs. 25500.00 ha^{-1} as compare to CF. There were no significant differences between NF and the CF practices in the majority of nutrients. However, there is a slight inclination towards the soil organic carbon build-up most (0.62 per cent) as compare to PoP CF (0.54 per cent). The efficacy of the NF treatment was context specific and varied according to district and the crop in question. The NF yield benefit is likely attributed to mulching, generating a cooler soil, with a higher moisture content and a larger beneficial microbiomes population. However, long-term field and landscape scale trials are needed to corroborate these initial observations.

DEMONSTRATION OF NATURAL FARMING AND CONVENTIONAL FARMING PRACTICES IN WHEAT (*TRITICUM AESTIVUM L.*) IN WEST NIMAR OF MADHYA PRADESH

Sanjeev Verma[1*], G. S. Kulmi [2], R.K. Singh[3] and Yogendra Jain[4]

[1]Scientist (Soil Science), [2]Senior Scientist & Head (Agronomy), [3]Scientist (Extension Education), RVSKVV-KVK, Khargone

[4]Associate Director Research, ZARS, Khargone (M.P.), India

**Corresponding author: sanjiv.soilscie@gmail.com*

Wheat (*Triticum aestivum* L.) is one of the world's most consumed cereal grains having good source of dietary fibres and resistant starch. It is grown in 53 % area (2,21,950 ha) of total cultivated area (416640 ha) with production and productivity in tune of 8755930 m t and 3945 kg ha^{-1} respectively. It is grown in medium black soils found in the district. A field demonstration was laid out during 2022-23 on farmers field of adopted villages of Krishi Vigyan Kendra, Khargone (M.P.) to demonstrate natural farming and conventional farming practices in wheat variety "HI 1544" under out scaling programme of natural farming. Recommended practices of Beejamrit (50 g kg^{-1} seed), Ghanjeevamrit (500 kg ha^{-1}), Jeevamrit, Kunap jal, Amrit pani (500 l ha^{-1}), Neemastra, Brahmastra, Dashparni ark (25 l ha^{-1}), Sonthashtra (12 l ha^{-1}), Khatti Chhachh (6 l ha^{-1}), Mulching (5 t ha^{-1}) and Vaphsa were applied in demonstration on natural farming in wheat. All recommended practices were applied in conventional farming treated as farmer practice. Results of one year field demonstration indicate that natural farming system recorded 12.87 % reduction (32.86 q ha^{-1}) in mean grain yield over conventional system (37.09 q ha^{-1}) of wheat. Similarly, 12.85 % reduction (Rs. 82150 ha^{-1}) in mean gross return ha^{-1} was recorded under natural farming system over conventional farming (Rs. 92725 ha^{-1}). However, 20.22 % (Rs. 3406 ha^{-1}) cost of cultivation (Rs. 16844 ha^{-1}) was reduced under natural farming over conventional farming (Rs. 20250 ha^{-1}) and obtained 10.97 % lower mean net return Rs. 65306 ha^{-1} in natural farming (Rs. 72475 ha^{-1}) over conventional farming. Reduction (20.22 %) in cost of cultivation resulted in 6.09 % higher B:C ratio (4.88) under natural farming system as compared to conventional farming (4.57 B:C ratio) of wheat. Farmers were convinced and having positive attitude with natural farming of wheat in the Khargone district. However, many constraints have been experienced at farmers level like poor availability of inputs, complexity in preparation of inputs, lack of suitable market outlets for organic products and no policy for minimum support price (MSP) is available for the organic products in the country.

NATURAL FARMING: A FARMING FOR IMPROVING SOIL HEALTH, NUTRITIONAL SECURITY AND ENHANCING FARMERS INCOME

S. C. Srivastava[1*], J. S. Rajput[2], Amita Sharma[3] and Raj Singh Kushwah[4]

[1]Sr Technical Officer (Agril Economics), [2]Scientist (LPM), [2]Scientist (Agro Forestry) and [4]Pr. Scientist and Head

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Krishi Vigyan Kendra, Gwalior-474 002

**Corresponding author: sharadrvskvv@gmail.com*

Natural Farming recognizes soil as a fundamental natural asset. In the quest to reap higher yields farmers started indiscriminate use of chemical fertilizers and pesticides contaminating the food chain. It further disturbed the delicate ecological balance polluting the soil, water and air. The intensive use of chemical fertilizers on these days has called up for an urgency to practice natural farming and it is necessary to regain the capacity to produce the natural food. Natural farming is recognized as an agroecology-based, diversified farming system, which integrate crops, trees and livestock, allowing functional biodiversity to reduce the cost of cultivation by replacing the chemical fertilizers and pesticides with home-made natural products like *Beejamrit, Jeevamrit, Ghanjeevamrit and Neemastra*. In rice wheat cropping system use of *Azolla, Azotobactor* increase nutrient availability of crops and also reduce compaction of soil by decomposing organic matter. Jeevamrit is a natural liquid which is an excellent source of natural carbon and biomass which contain macro and micro nutrients required by crops. Jeevamrit is prepared from desi cow dung, desi cow urine, pulse flour, jaggery and one handful of bund/forest soil. The constituents like cow dung and cow urine act as inoculums of beneficial microbes and these microbes multiply in number by using pulse flour and jaggery. In comparison to other forms of fertilizers, Jeevamrit has proven to be more effective and can be used along with other manures. The beneficial micro-organisms in Jeevamrit help in mineralization of soil nutrients and make the nutrients available to plants when applied to the soil. Foliar application of Jeevamrit also brings in some changes in the phylosphere microclimate. Such fertilizers are cost effective and eco-friendly bio-inoculants having great potential to enhance agricultural production in a sustainable way. It can reduce excessive use of the chemical fertilizers in the soil which cause low fertility of the soil. Therefore, it can be used in the natural farming, serves as a rich source of the micro-organism that fixes the nitrogen and solubilize phosphorus and also it is a rich source of carbon, nitrogen, phosphorus, potassium and many micronutrients. The use of Jeevamrit is, in acidic soil increases the pH level and vice versa in alkaline soil. It increases crop yield and cuts down an entire expense of chemical fertilizer and improves the soil health. Thus, the natural farming techniques are essential for developing a green economy and maintaining agricultural sustainability in the face of the gave threats posted by the climate change.

NATURAL FARMING AND THE ROLE OF INDIGENOUS NOMADIC COWS

Satyendra Pal Singh[1*] and Y.P. Singh[2]

[1]Principal Scientist and Head, RVSKVV-Krishi Vigyan Kendra, Lahar (Bhind) M.P.

[2]DES, RVSKVV, Gwalior (M.P.)

**Corresponding author: singhsatendra57@gmail.com*

Today, two types of farming methods are being adopted in our country and all over the world, in which chemical farming and organic farming are prominent. But today natural farming is being talked about under a new initiative in India. However, natural farming is not a new method for India. Farmers in our country have been relying on and practicing natural farming for centuries; But after the Green Revolution, due to the increase in the use of chemical fertilizers and pesticides in farming, natural farming gradually became extinct, efforts are being made to bring it back into practice. Natural farming is based on Indian indigenous cow. Not only does the cow dung contain more micro-organisms, the smell of the cow dung and urine also brings the native earthworms to the surface of the soil and makes the land fertile. Desi cow dung contains 16 main nutrients. Only these 16 elements are useful for the growth of our plants. Plants take these elements from the soil and build their bodies. All these 16 nutrients are produced in the intestine of the desi cow; hence the desi cow is the foundation of natural farming. Natural farming is cow based i.e. native cow-based farming. In this way it can be said that we will be able to protect the native cow through natural farming. The stray nomadic indigenous cow can also have an important place in natural farming. More microorganisms are found in the dung of nomadic indigenous cows than that of domesticated indigenous cows. Those farmers who do not have native cows today can also start natural farming by catching nomadic native cows. Not only will this give a new lease of life to the nomadic indigenous cows, they will also be able to get adequate fodder. In this way, along with increasing the income of the farmers, condition of the soil of their fields will improve. This type of step by farmers will protect the native cow and also promote natural farming. Natural farming is the farming of the future. By promoting it, we will be able to leave the coming generations free from diseases and ailments as well as a good and fertile land for our progeny. Seeing the way in which the use of chemical fertilizers and poisonous pesticides in agricultural land has increased in the last few decades, on one hand the fertility of the land has diminished, while on the other hand, due to the outbreak of deadly diseases, the effect of epidemics like cancer has increased among the common people. Among the products prepared under natural farming, local cow dung and cow urine are required to prepare Jeevamrit, Ghanjeevamrit, Bijamrit etc. Similarly, in preparing Neemastra, Agniyastra, Brahmastra, Neempaste, Dashaparni extract, Saptadhanya etc., apart from local cow dung and cow urine, jaggery, gram flour, various types of grains and grains available at home are required. Apart from leaves of various trees and plants, tobacco, green chillies, old sour buttermilk, garlic etc., cow urine of local cow has special importance for the products prepared to protect crops and plants from various types of diseases. Farmers can start natural farming from some part of their land. After this, seeing the results obtained from natural farming in the coming season, it can be further expanded on a larger scale.

PERFORMANCE OF TOBACCO LEAF EXTRACT IN THE MANAGEMENT OF BRINJAL SHOOT AND FRUIT BORER

Akhilesh Kumar*, Smita Singh, Rajesh Singh and AK Pandey

JNKVV-Krishi Vigyan Kendra, CoA, Rewa-486 001 (M.P.)

**Corresponding author: akhiliivr@gmail.com*

Shoot and fruit borer, *Leucinodes orbonalis* is a major and regular pest of Brinjal causing damage to even 35 -50% of fruits or more.The larvae bore into tender shoots at the vegetative stage, flower and fruit. Brinjal (*Solanum melonegna* L.) is an important vegetable crop. It's grown in Kharif and has one-year cultivation whereas it is a multi-year crop. In India, mainly brinjal is cultivated in Andhra Pradesh, West Bengal, Karnataka, Tamil Nadu, Maharashtra, Uttar Pradesh, Orissa, Bihar and Rajasthan. India's brinjal production is second only to China in the world, with more than 50 percent of the area under cultivation treatments in 2023 to 2024. To evaluate the performance of recommended practice, tobacco is soaked in water in the ratio of 1:10 (100 gram/litre of water) overnight and extracted liquid is filtered through muslin cloth and add 1-2 teaspoonful detergent powder in the filter liquid (RP) and compared with farmers practices (FP) was found more infestation of BSFB than recommended practice (RP). Economics and benefit cost ratio of both FP and RP plots were worked out. The percent fruit damage of Brinjal was recorded lowest in RP (12.20), while 33.60 percent fruit damage was recorded in FP. The net profit recorded under RP and FP were Rs. 365520.00/ha and Rs 246150.00/ha respectively. Benefit cost ratio was 4.98 under RP, while 3.82 in FP. The technology of tobacco leaf extract sprayed at fortnightly interval is found most suitable for reducing shoot and fruit borer population and most economical for the management of fruit damage losses in Brinjal in comparison with farmers practices. The leaf extract of tobacco for management shoot & fruit borer in Brinjal was profitable to farmers and eco-friendly to environment.

NON-CHEMICAL WEED MANAGEMENT METHODS IN ORGANIC FARMING

Dhananjai Singh[2*], K. P. Tiwari[1], Shivam Mishra[3], Vinita Singh[2], R. R. Singh[2], K. K. Rana[4], Kundan Muwel[4] and Arun Rajak[4]

[1]Principal Scientist, [2]Scientist, [4]Programme Assistant, Krishi Vigyan Kendra, Umaria (M.P.)

[3]Young Professional (ATARI, Jabalpur)

**Corresponding author: dsingh_001@rediffmail.com*

Crop rotation is the practice of growing a series of crops sequentially over time on the same land, thus providing temporal variability. In crop rotations, weeds are subjected to diverse weed control methods (no-tillage/till, planting dates, fertilization regime), thus preventing weeds from adapting and surviving. Cover crops are crops planted between the growing seasons to improve soil health, reduce soil erosion and suppress weeds and other pests. In research studies found that nearly 30 per cent weed seed bank depletion in cotton field and 15 - 20 per cent increased seed cotton yield could be obtained by adopting SSB technique in two consecutive years, when compared to conventional seedbed preparation. Allelopathy could be used to suppress weeds by using companion or rotational crops, mulching with plant residues, applying plant extracts. Sunflower plant extract application was found to be reduces the weed population. It is also a major constraint on increasing agricultural

productivity and farmers' income. Therefore, taking this into consideration the importance of weed management is much higher in crop production. Weeds are conventionally controlled by herbicides which led to herbicide persistence and resistance and a shift of weed flora. Application of high dose of inorganic herbicide also causes degradation of soil health, pollution of ground water table and extinct of natural enemies. So, non chemical weed management is much demanded to get higher crop production. In an organic production system, weeds are one of the most troublesome, time consuming and costly production problems. Weeds are undesirable plants that infest crops and inflict an adverse impact on crop yield by competing for water, light, space, and nutrients.

PROMOTION OF NATURAL FARMING THROUGH BIO CONTROL AGENTS IN NARMADAPURAM DISTRICT OF MADHYA PRADESH

Brajesh K. Namdev[1*], S. R. K. Singh[2], S. K. Garg[1], R. Patel[1] and D. Patel[1]

[1]Krishi Vigyan Kendra Govindnagar Narmadapuram, Madhya Pradesh

[2] ICAR-Agricultural Technology Application Research Institute, Zone- IX, Jabalpur, M.P.

**Corresponding author*: *brajesh.kvk2018@gmail.com*

Large scale use of chemical pesticide has not only added residue load on the food chain but also eliminated number of predators, parasitoids population from the agro ecosystem across the states in India. Insect pest resurgence resistance and indiscriminate use of insecticide has increased the cost of production. Natural enemies play an important role in limiting the densities of crop pests. This has been demonstrated repeatedly when pesticides have devastated the natural enemies of potential pests. Conversely, when a non-toxic method is found to control a key pest, the reduced use of pesticides and increased survival of natural enemies frequently reduces the numbers and damage of important pest of field and vegetable crops. Bio control agents (BCA) include predators, parasitoids, EPNs and Bio pesticide. BCA in agri -ecosystem can be increased by - (i) Conservation of existing natural enemies, (ii) Introducing new natural enemies and establishing a permanent population, and (iii) Mass production and periodic release of natural enemies (Bio control agents) or inundatively. Indian Oil Corporation limited (IOCL) funded Bio control production laboratory established in Krishi Vigyan Kendra Govindnagar Narmadapuram play important role for mass production of different bio control agents viz. *Trichogramma chilonis*, *T. japonicum*, Green lacewings, Reduvid bug, EPNs and supply to farmers community to use as a critical input for crop pest management in different crops. KVK also promotes use of BCA for crop pest management during different mandatory activities of KVK as well as also provide skilled training on low-cost mass production technology of BCA to farmers, extension functionaries, rural youth, farm women and support to establishing own enterprises for income generation and natural farming.

NUTRITIONAL KITCHEN GARDENING IMPROVES HUMAN HEALTH

Mayank Mehra*, K. S. Yadav, Mamta Singh, Vaishali Sharma and D. P. Singh

KrishiVigyan Kendra, Sagar, JNKVV Jabalpur (MP)

**Corresponding author: mayankvk90@gmail.com*

Nutritional kitchen gardens are universally promoted as healthy improve management as per Recommended Dietary Allowances, daily intake of vegetables should be 300 gm/person including roots and tubers, green leafy and other vegetables. With view high prevalence of malnutrition especially micronutrient deficiencies and inadequate availability of vegetables, recommendation realistic adoption of kitchen garden is the best option which can supply required vegetables in daily diet to the rural families. In India per capita vegetables availability is around 135 g against 300g vegetables for a balance diet. Even this low level of average supply does not fully reflect the consumption pattern of the rural household and those below the poverty line where per capita vegetable consumption is very low, even lower than 40 g per day. This is the study of highlights that nutritional kitchen gardening can help in improving the Nutritional Security, malnutrition, need to all nutrient required in human body and rural revenue all over Bhundelkhand part of Madhya Pradesh and it is also acts as a major source for women empowerment. The involving of women will be able to raise vegetables and fruits in backyard in a systematic manner to bust health as well as economic of family level. By using different types of nutritional kitchen gardening, they would grow through kitchen garden they would also get essential amino acid, carbohydrate, protein, fats, mineral, all micro nutrients and macro nutrients in human balancing diet. If all farm women use of nutritional kitchen garden, they can sell it in the market for additional income.

COMPARATIVE STUDY OF NATURAL, ORGANIC AND CONVENTIONAL FARMING OF PIGEONPEA (*CAJANUS CAJAN L. MILLIPS*) IN NIMAR ZONE OF MADHYA PRADESH

G. S. Kulmi[1*], Sanjeev Verma[2], R. K. Singh[3], S. K. Badodiya[4], Yogendra Jain[5] and D. H. Ranade[6]

Krishi Vigyan Kendra, Khargone (M.P.), RVSKVV, India

**Corresponding author: kvk.khargone@rvskvv.net*

Pigeonpea (*Cajanus cajan L. Millips*) is a very precious pulse crop grown in about 1.51 % (6275 ha) area of total cultivated area (416640 ha) with total production and productivity in the tune of 6582 m t and 800 kg ha^{-1} respectively in West Nimar (Khargone) district of Madhya Pradesh. Pesticides and fertilizer consumption is very high about Rs. 686 crores per year and cancer and other chronic diseases create serious menace day-by-day in Khargone district of Madhya Pradesh. Considering this view, field demonstrations were conducted at instructional farm under crop cafeteria and technology park programme during 2020-21, 2021-22 and 2022-23 to evaluate the comparative performance of Natural, Organic and Conventional farming systems in Pigeonpea variety "Pusa 16" under Nimar Zone conditions. Recommended practices of seed treatment with Beejamrit (50 g kg^{-1} seed), Ghanjeevamrit (250 kg ha^{-1}) at sowing, Jeevamrit, Kunapjal, Amritpani (500 l ha^{-1}), Neemastra, Brhamastra, Dashparni ark (25 l ha^{-1}) at 30, 60 and 90 DAS, Sonthastra (12 l ha^{-1}), Khatta Chhachh (6 l ha^{-1}) at occurrence of disease and mulching 5 t ha^{-1} after germination were applied in natural farming system and Beejamrit (50 g kg^{-1} seed), soil application of Rhizobium+PSB (each 5 kg ha^{-1}),

Vermicompost (3 t ha^{-1}) at sowing, Vermi wash+gaumutra (1+1 l 10 l^{-1} of water) at 30, 45 and 60 DAS, Neemashtra (25 l ha^{-1}) at 30, 60 and 90 DAS, Neem oil (2.5 l ha^{-1}) at 20, 40 and 60 DAS and Trichoderma harzinium (1 kg ha^{-1}) at disease occurrence were used in organic farming. All recommended practices were applied in conventional farming. Results of three-year field demonstrations reveal that 29.93% (3.66 q ha^{-1}) and 16.10% (2.21 q ha^{-1}) reduction in seed yield was observed under natural farming (12.23 q ha^{-1}) and organic farming (13.68 q ha^{-1}) systems over conventional farming (15.89 q ha^{-1}) of pigeonpea. Similarly, 29.62% (Rs. 21848 ha^{-1}) reduction in gross return and 26.68% reduction (Rs. 14511 ha^{-1}) in net return were realized under natural farming (Rs. 55240 ha^{-1}), whereas, 16.05% (Rs. 13220 ha^{-1}) reduction in gross return (Rs. 82378 ha^{-1}) and 15.62% reduction (Rs. 9424 ha^{-1}) in net return were realized under organic farming (Rs. 82378 ha^{-1} gross return and 60327 ha^{-1} net return) respectively over conventional farming (Rs. 95598 ha^{-1} gross return and 69751 ha^{-1} net return). However, 39.63% (Rs 7337 ha^{-1}) and 17.21% (Rs. 3796 ha^{-1}) lower cost of cultivation was realized under natural farming (Rs. 18510 ha^{-1}) and organic farming (Rs. 22051 ha^{-1}) as compared to conventional farming (Rs. 25847 ha^{-1}), which resulted in 7.28 and 1.39% higher benefit cost ratio under natural farming (3.98) and organic farming (3.74) over conventional farming (3.69). It can be concluded that natural farming and organic farming of pigeonpea proved more beneficial in terms of monetary gain per rupee investment as compared to conventional farming.

DOUBLING GINGER CROP YIELD THROUGH NATURAL FARMING IN TRIBAL AREAS

Neeraja Pasupuleti

Assistant Professor, KVR Government College for women, Cluster University, Kurnool, A.P

Corresponding author: pnrbmr@gmail.com

The present study is aimed at Smart Tribal Farming with main objective of Digital Transformation of Agriculture in tribal areas for doubling the tribal farmers Income which is a component of Dr. Ashok Dalwai committee report on Doubling the Farmers Income by 2022 (DFI-2022) and beyond. A Pilot Project Initiative in a Cluster of 10-15 tribal villages in Bharat jointly by Cluster University Kurnool, Andhra Pradesh, and Shobhit Institute of Engineering and Technology, Meerut in association with Non-Governmental Organisations (NGOs) and Public and Private Research Institutions of Bharat. The present study is the outcome of collaborative efforts of Cluster University Kurnool, Shobhit Institute of Engineering and Technology Meerut along with Participatory Rural Development Initiatives Society (PRDIS) by conducting weekly interactive sessions through online meetings with the stake holders of the selected cluster of tribal villages in Andhra Pradesh, Telangana and Chhattisgarh. Ginger Crop Yield through natural farming in tribal areas involves implementing sustainable organic practices. In India various Tribal communities are engaged in Ginger Cultivation. The major tribes involved in ginger cultivation are The Khasi, The Jaintia, The Garo tribes of Meghalaya, The Nyishi of Arunachal Pradesh, and The Kuki of Manipur, The Naga tribes such as Ao, Angami, and Lotha of Nagaland, Santal of Jharkhand, Bonda in Odisha and Mizo tribe of Mizoram. Meghalaya is one of the major ginger producing states in India. It is identified that soil health management, companion planting, bio fertilizers, and organic pest control, genetic diversity, encouraging natural predators, crop residue Management, training and education, market diversification play key role in enhancing the ginger crop yield. As potassium and phosphorus requirements are high, nitrogen requirement is very low, natural farming approaches like Fukuoka, SubashPalekar (ZBNF), and Cho Han Kyu are suitable for doubling ginger crop yield. It can be concluded that efficient production and effective promotion become imperative for the economic development of the tribal community.

SIGNIFICANCE OF PLANT DISEASE FORECASTING FOR DISEASE MANAGEMENT UNDER NATURAL FARMING

Mukesh Kumar Bankoliya[1*], Sarvesh Kumar[2], O. P. Bharti[3], R. C. Jatav[4] and Sandhya Mure[5]

Krishi Vigyan Kendra, Harda JNKVV (M.P.) 461331

**Corresponding author: mukesh.agrian@gmail.com*

Plant disease forecasting is a management system used to predict the occurrence or change in severity of plant diseases. At the field scale, these systems are used by growers to make economic decisions about disease treatments and its management. Often the systems ask the grower a series of questions about the susceptibility of the host crop and incorporate current and forecast weather conditions to make a recommendation. Typically, a recommendation is made about whether disease treatment is necessary or not. Forecasting systems are based on assumptions of the disease triangle and in all interacts in such a fashion that disease can occur and cause economic losses. In most cases, the host can be suitably defined as resistant or susceptible and the presence of the pathogen may often be reasonably ascertained based on previous cropping history or perhaps survey data. The environment is usually the factor that controls whether disease develops or not. Environmental conditions may determine the presence of the pathogen in a particular season through their effects on processes such as overwintering. It also affects the ability of the pathogen to cause disease, e.g. minimum leaf wetness duration is required for grey leaf spot of corn to occur. In these cases, a disease forecasting system attempts to define when the environment will be conducive to disease development. Plant diseases forecasting systems must be reliable, simple, cost-effective and applicable to many diseases. As such they are normally only designed for diseases that are irregular enough to warrant a prediction system, rather than diseases that occur every year for which regular treatment should be employed. Forecasting systems can only be designed if there is also an understanding on the actual disease triangle parameters.

IMPACT OF NATURAL FARMING PRACTICES ON THE YIELD OF CHICKPEA *(CICER ARIETINUM)* IN NARMADAPURAM DISTRICT MADHYA PRADESH

Devidas Patel[*], Sunjeev Kumar Garg, Praveen Solanki and Brajesh Kumar Namdev

Krishi Vigyan Kendra, Govindnagar, Narmadapuram M.P. 461990

**Corresponding author: kvkgovindnagar2017@gmail.com*

Natural Farming (NF) is contemplated by its protagonist as one of the most potential crop cultivation methods to drastically cut down production costs by reducing dependence on market for purchase of critical inputs. Being considered as an agroecologically diverse farming practice, it brings hosts of ecological and social benefits, although, there are two school of thoughts- opposing each other on the efficacy of its practices. In order to better understand the practice followed in NF as well as the cost saving and income gain by the NF farmers, the study was undertaken in the Narmadapuram District of Madhya Pradesh in rabi session on chickpea crop during 2022-23 conducted on 8 farmers' field. Though there are certain practices prescribed in natural farming, the most adopted practice is use of Ghanajeevamrit, Jeevamrit, Beejamrit and other plant protection materials. The findings of the study revealed that the organic carbon % (OC %) increase in NF Practice

fields as compared to farmer practices, NF Demonstration practice resulted in a mean Yield of 17.80 qt/ha as compared to farmer's practices 20.8 qt/ha. In NF practice the average yield decreased 16.85% as compared farmers practice, significant reduction in cost of cultivation Rs. 19300 per ha of chickpea crop was observed as well as significantly increase net return Rs. 114500 per ha. and B:C ratio 6.9 as compared to farmer's practices (Rs. 27560, Rs. 83408 and 4.02 respectively). However, the effect on crop yield is not conclusive. Thus, natural farming may not look as yield enhancing farming practices, but definitely increases farmers' income through cost reduction and long-term sustainability.

IMPACT OF HOLISTIC NATURAL FARMING PRACTICES ON TRANSFORMATIVE EFFECT WITH HORTICULTURAL CROPS IN DEGRADED AND WASTE LANDS IN TELANGANA

B. Neeraja Prabhakar*, J. Shankaraswamy, A. Bhagwan, N. Seenivasan, A. Kiran Kumar, A. Girwani, M. Rajasekhar, P. Saidaiah, Shahanaz and B. Chandra Shekar

Sri Konda Laxman Telangana State Horticultural University, Mulugu, Siddipet Dist, Telangana,
**Corresponding author: vcskltshu@gmail.com*

For the last 20-30 years, farmers in India have been practicing a chemical based horticultural crops production strategy. The detrimental effects from the use of agricultural chemicals on horticulture farming community, the farm, the wealth of the nation, the environment clearly evident that human exposure to these agrochemicals can be a factor in a range of chronic health conditions and diseases like cancer, reproductive, endocrine, immunological, congenital and development. This crucial issue requires firm resolve is to shift from chemical based farming to sustainable natural farming. By considering the above facts into consideration The college of horticulture, Mojerla, Sri Konda Laxman Telangana State Horticultural University established natural farming in 2019 at Instructional farm madanapuram, located at 16.37° Latitude and 77.89° Longitude with stony soils composed of more than 40% rock fragments and excavated soils are chosen for proactive natural farming solutions in three varieties of Fig (Deanna, Poona fig, Brown turkey), pomegranate (Bhagwa), guava and seven varieties of mango. The present study is to reuse and rebuild organic matter and quality of excavated rocky soils by using holistic natural production management system to enhance horticulture-ecosystem health, including above and below ground biodiversity. The study examined the important natural farming practices like Organic mulch material produced on farm residue, pruned and fallen leaves and twigs, mechanical removal of weeds carried out in between raised bed rows and burying freshly, and ecological approach of burying freshly shed weed seeds below 1 cm depth from which they germinate and at soil surface cut of weeds and burying in between raised bed increased the soil organic carbon from 0.22 to 0.58% in pomegranate field, 0.24 to 0.55% in Guava field, 0.27 to 0.48% and total nitrogen in all selected field. At the end of 4 years of management practices fruit yield was obtained 3.96 kg/plant in pomegranate, 13.8 kg/plant in fig and 11.65 kg/plant in guava. From this study it has been concluded that good natural farming practices enhanced total nitrogen and organic carbon dynamics in selected horticultural crops as these parameters acts as indicator of soil fertility for future systematic study.

NATURAL FARMING: A KEY OF LOW COST AND CHEMICAL FREE FARMING FOR THE SOIL AND HUMAN HEALTH BY KVK RAJNANDGAON

Anjali Ghritlahre[1*], Gunjan Jha[2], Atul Rameshwar Dange[3] and Yogendra Shriwas[4]

[1]Subject Matter Specialist (Soil Science), [2]Senior Scientist and Head (Horticulture), [3]Subject Matter Specialist (FMPE), [4]Subject Matter Specialist (Agricultural Extension)

Krishi Vigyan Kendra Rajnandgaon, (IGKV Raipur) Chhattisgarh

**Corresponding author: kvk.rajnandgaon@igkv.ac.in*

The "Green Revolution" (GR) technology-induced agricultural intensification has transformed India from food scarcity to a food surplus country. However, this has also resulted into several adverse repercussions. Increased application of chemical fertilizers and pesticides with stagnating/ declining crop productivity has dovetailed with uncertain market conditions and climate change effects which have resulted in un-remunerative agriculture. Consequently, farmers have fallen into the debt trap due to the rising cost of crop production apart from health hazards due to serious exposure to harmful chemical pesticides. Natural Farming (NF), an agro-ecological approach to farming is believed to be an effective way to counter some of these challenges. Healthy soil is the foundation upon which sustainable agriculture is built. Farming practices differ mainly based on soil inputs and crop protection measures. In conventional chemical farming practice, indiscriminate use of chemical fertilizers and pesticides destroy the beneficial soil micro flora change the soil nature and also contribute to the high crop production cost. Heavy metals from the polluted soil may enter the food chain in significant amounts and show adverse health effects. The essence of natural farming is to minimize the external inputs to the farm land, and nurture the soil fertility. It was shown that enrichment of soil occurs through propagation of beneficial soil microbes. It encourages the natural symbiosis of soil micro flora and crop plants. Natural Farming (NF) is considered to be agro ecology based diversified farming system, which integrates crops, trees and livestock, allowing functional biodiversity to drastically cut down production costs by replacing the chemical fertilizers and pesticides with home-grown products like Jeevamrit, Beejamrit, Neemastra, brahmastra and sanjeevak etc.

IMPACT STUDY OF LOW BUDGET NATURAL FARMING ON SOYBEAN CROP

Savita Kumari[*], A. K. Badaya, K.S. Bhargav and Neerja Patel

Krishi Vigyan Kendra Dewas, Madhya Pradesh

**Corresponding author: savitachauhan.iari@gmail.com*

Natural farming is emerging as an alternative farming focusing on optimum utilization of native local resources.An experiment was conducted to examine the effect of natural farming on growth, yield and quality contributing visual parameters in soybean crop on 10 farmers' fields of Dewas districts of different blocks (Sonkatch, Tonkhurd and Dewas) during kharif2023 The experiment comprises of 2 treatments *i.e.* T1 Farmers Practice, farmers are using imbalance use of fertilizer (N:P 40: 80/ha) and T2. The experiment comprises of Bijamrit for seed treatment @ 25 ml/kg, Ghanjivamrita basal dose @ 5.0 q./ha., Jivaamrit @ 50L/ha. in 500 L water at 30 DAS and 45 DAS and Nimaastra @

25L/hac The experiment was carried out in alkaline nature of vertisols with soybean variety JS-9560. The plant protection measures include Nimastra @ 25L/hac during the crop period. Ghanjivamrita @ 5.0 q/ha were applied as basal dose at the time of sowing The Jivamrit was applied as a 1st spray @ 50L/ha, 40 DAS at Pre-flowering stage, 2nd spray at 55 DAS and 3rd Spray 70 DAS, simultaneously. The recorded data showed the maximum plant height (69.9 cm) was observed in T1 (Farmers practice) while minimum (66.50 cm) in T2 (Natural farming). The similar trends were also observed for number of pods per plant, number of grain per plant, weight of grain per plant, yield per plot, respectively. The yield 14.53 q/ha was recorded with application of natural farming while the yield 15.88 q/ha was noticed in case of Farmers practice. Data of experiment revealed that practice of natural farming components yield were decreased. The economic analysis of data revealed that the practice of natural farming fetches higher net return Rs. 65480/- and B:C ratio1.33 as compared to traditional farmer practice. It is concluded that the adoption of natural farming system may be beneficiated as compare to the local farmer practice and also helpful to maintaining the soil health and safe environmental pollution and safe human health.

EFFECT OF NUTRIENT MANAGEMENT THROUGH NATURAL FARMING ON GROWTH AND YIELD OF CHICKPEA *(CICER ARIETINUM L.)*

S. K. Ahirwar[1*], R. C. Sharma[2] and Aruna Devi Ahirwar[3]

[1,2]JNKVV, Krishi Vigyan Kendra - II, Delakhari, Tamia, Chhindwara (MP)

[3]JNKVV, ZARS, Chhindwara (MP)

**Correspondence author: sureshas.2007@rediffmail.com*

A field study was carried out at 8 farmers fieldof Parasia block, District -Chhindwara (MP) during year 2022-23 withstudy the effect of nutrient management through natural farming on growth and yield of chickpea (*Cicer arietinum*L). The treatment combination as (T_1) -chemical farmingand (T_2) -application of *Ghanjivamrit*1000 kg/ha as soil application + seed treatment with *Beejamrit* @ 1 liter/ 20 kg seeds + *Jivamrit* @1500liter /ha in three time of spray + One spray of *Neemastra* 500 liter/ ha + *Agniastra* 20 liter @500literwater (two spray at 20-25 DAS interval) as. Results showed that the growth and yield of chickpea was significantly increased due to natural farming component as compared to chemical farming (T_1). The seed sowing was done 18.11.2022, with seed rate 65 kg/ha. The maximum plant height (43.15 cm), number of branches (11 plant^{-1}) in natural farming. Whereas, non-significant effect on seed yield (13.70 qt/ha) and gross returns (Rs 68500/ha) in natural farming (T_2) over using chemical farming by noted higher seed yield (15.45 qt/ha) and gross returns (Rs 77250/ha). The significantly obtained higher net profit (Rs 52700/ha) and C: B ratio (3.34) in T_2, comparatively noted lower net profit (Rs 55750/ha) and B:C ratio (2.59) in chemical farming (T_1).

CHANGES IN SOIL PARAMETERS, MARKETABLE FRUIT YIELD AND ECONOMICS OF GUAVA UNDER CHEMICAL FERTILIZERS, VERMICOMPOST AND NATURAL FARMING COMPONENT

Naresh Gupta*, S. K. Singh, Rajeev Singh Chauhan and V. S. Kansana

Krishi Viyan Kendra, Datia, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior (M.P.) India

**Corresponding author: kvk.datia@rvskvv.net and naresh_ric@yahoo.com*

The soil organic matter maintains and improves many physical, chemical, and biological properties. It determines larger part of soil and has tremendous ecological significance; it influences ecosystem productivity, soil health, and climate quality. Keeping in view, the present study was carried out during 2022-23 in Guava plant (Cv. Gwalior -27) with the aim of Changes in soil properties and marketable fruit yield of guava under chemical and organic as well as natural farming component treatments. Under present study, five treatments namely T_1: Control, T_2: chemical farming (100% RDF), T_3: 20 kg vermicompost plant^{-1}, T_4: T_3 + application of Jeevamrit (4 times in a cropping season), T_5: T_4 + mulching by paddy straw. Seven plants of same age were selected in each treatment and consider as a replication under randomized block design (R.B.D.). Results revealed that application of vermicompost alongwith jeevamrit and mulching was found to produce significantly highest marketable fruit yield, NPK content and keeping quality of guava as compared to chemical fertilizers and vermicompost applied treatments. Treatment comprises of vermicompost + jeevamrit + mulching (T_5) recorded highest organic carbon content in soil and also improve the status of available nitrogen, phosphorus and potassium in soil after harvest of the crop as compared to chemical fertilizers and control treatments. Highest net return and B:C ratio was also observed in this treatment.

ASSESSMENT OF NATURAL FARMING PRACTICES ON DIFFERENT KHARIF CROP IN BHIND DISTRICT OF MADHYA PRADESH

B. P. S. Raghubanshi[1*], Y. P. Singh[2], S. P. Singh[3] and K.V. Singh[4]

[2]DES, RVSKVV, Gwalior

[1,3&4]Rajmata Vijayaraje Scindia Krishi Vishwavidayalaya Krishi Vigyan Kendra, Lahar (Bhind) M.P.

**Corresponding author: drbraghu@gmail.com*

Most of the farmers heavily depend on inorganic external chemical inputs such as fertilizers and pesticides that contaminate groundwater and other water dependent ecosystem and reduce the soil fertility over time. The continuous use of pesticide and chemical is a serious problem for the health of the farmers across India. A experiment was conducted to compare natural and chemical farming at farmers field. The study was under taken in the district Bhind of Madhya Pradesh during kharif season of 2023-24 covering 8 NF- adopting farmers and 8 chemical farming farmers. Though there are various practices prescribed in Natural Farming, the most adopted practices are use of Jeevamritha, Beejamritha and Ghanjeevamritha for natural management and Nimastra, Bramashtra and Dasparni Ark for plant protection.

The average cost of cultivation of different crop viz. Pearmillet (three farmers), Paddy (one farmer), Green Gram (two farmers) and Sorghum (two farmers) was observed as Rs. 17800/-, 50880/-

, 15650/- and 18000/- per/ha. respectively while in chemical farming farmers it was Rs.23833/-, 57850/-, 22650/- and 24200/- per/ha. respectively for Pearmillet, Paddy, Green Gram and Sorghum crop. It was clear from the data that there was significant reduction in cost of cultivation of different crop in Natural farming (NF) practices in comparison to chemical farming practices. NF farmers harvested lower crop yield i.e. 26.4, 35.8, 7.9 and 25.25 qt/ha. for Pearmillet, Paddy, Green Gram and Sorghum crop respectively while for chemical farming farmers the yield was i.e. 34.5, 42.10, 11.25 and 33.65 qt/ha. for Pearmillet, Paddy, Green Gram and Sorghum crop respectively. The B:C ratio for natural farming practices for Pearmillet, Paddy, Green Gram and Sorghum was 4.15, 1.75, 4.31 and 4.9 respectively while in chemical farming it was 3.95, 1.71, 4.24 and 4.74 for Pearmillet, Paddy, Green Gram and Sorghum crop respectively. It is clearly seen that B:C ratio was higher in NF practices in comparison to chemical farming Practices. Thus, Natural farming may Not look as yield enhancing farming practices, but definitely increases farmer's income through cost reduction and long term sustainability.

AWARENESS AND ADAPTATION OF CLIMATE SMART AGRICULTURAL PRACTICES: WAY FORWARD FOR NATURAL FARMING

K. Baidya, M. A. Khan, P. K. Pandey* and M. L. Sharma

Department of Agricultural Extension, IGKV, Raipur

**Corresponding author: prasant.igau@gmail.com*

Climate change has damaged the livelihoods of peoples specially in developing nations, where agriculture is the main source of income for a large proportion of the population. Climate change is unavoidable and farmers have to face the task of adjusting and mitigating to these unavoidable changes. Adaptation of climate smart agriculture is a comprehensive strategy for mitigating the negative effects of climate change. This study, therefore, investigates the awareness and adaptation process. This investigation was carried out in three randomly selected districts of the Plains zone of Chhattisgarh state with a total of 240 farmers from 12 villages as respondent. The study's findings revealed that the respondents were having farming experience of more than 20 years with marginal size of land holding and 172 percent average cropping intensity provides annual income between Rs. 100001-200000. Rural Agriculture Extension Officers and input dealers were the main source of information for climate smart agricultural practices. The respondents had medium level of need and moderately favorable attitude towards climate smart agricultural practices. Duration of varieties was important trait and due to adaptation of climate smart agricultural practices, average yield was increased by 13.62 percent. That too when, two third of the respondents had medium level of awareness about climate smart agricultural practices. The majority of respondents had medium level of adaptation concerning with varieties, agro diversification and soil management practices. The major constraints towards adapting climate smart agricultural practices were lack of sufficient knowledge and non-availability of inputs in time guidance. To overcome the constraints, respondents suggested for sufficient knowledge and guidance towards climate smart agricultural technologies along with timely availability of agricultural at a cheaper price.

EXTENSION STRATEGIES FOR PROMOTING NATURAL FARMING IN RICE-BASED CROPPING SYSTEM: THEMATIC INTERVENTIONS FOR SUSTAINABLE LIVELIHOOD

M. L. Sharma*, M. A. Khan and P. K. Pandey

Department of Agricultural Extension, IGKV, Raipur (CG)

**Corresponding author: mlsharma.igau@gmail.com*

The world's population is predicted to expand to approximately 10 billion by 2050. It is expected that in a situation of modest economic growth, this will boost agricultural demand up to 50%, in comparison to 2013. Increasing food production and economic growth have often come at a heavy cost to the natural environment, results in significant decrease in coverage of forest area and biodiversity over the decades. Consequently, groundwater resources are also getting depleted rapidly. To meet out the food demands of world population High-input, resource-intensive farming systems are resulting in massive deforestation, water crisis, poor soil health and higher emissions of greenhouse gases. Natural Farming offers a solution to these problems; it also has the potential to employment generation and curtailing the migration of rural youth. As the name suggests, natural Farming is the art, practice and the science of working with nature to get much more with less. In India, about 4.09 lakh ha area from 8 states viz. Andhra Pradesh, Chhattisgarh, Kerala, Himachal Pradesh, Jharkhand, Odisha, Madhya Pradesh and Tamil Nadu have been covered under the Natural Farming with various cereals, pulses, oilseeds, spices and plantation crops. Farmers of Chhattisgarh state is also growing Rice, Wheat and Pulses, etc. under the natural farming with area coverage of 0.85 lakh ha which is about 1.80 percent area of net cultivated area of the state. Still there is much scope to increase the area and crops in Chhattisgarh state due to its diverse agro-climatic situation and farmers' practices. For this purpose, there is strong need of holistic extension approach. In this thematic paper, various dimensions of extension strategies and policies for promotion of natural farming in Chhattisgarh State will be discussed with due incorporation of various findings of researches conducted.

IMPACT ASSESSMENT OF TRAININGS ON NATURAL FARMING

R. K. Yadav

RVSKVV, Krishi Vigyan Kendra - Alirajpur (M.P)

Corresponding author: rkyadavrca@gmail.com

Chemical free farming methods like natural and organic farming attempt to minimize or eliminate external agricultural inputs. However, indiscriminate use of chemical inputs has caused serious hazard to human life. Conservation agriculture, carbon positive farming, organic farming, natural farming and regenerative agriculture have been recognized as such alternative agriculture practices to conventional farming to produce quality food without negative effects on the environment. However, a concept of chemical free diversified agriculture-based farming practices with more concern on affordable native resources and management practices has emerged as a generic term "Natural Farming" Well-grounded in agro-ecology, it is a diversified farming system that integrates crops, trees and livestock, facilitating optimal use of functional biodiversity.

Krishi Vigyan Kendra, Alirajpur (MP) organized 110 awareness program and 10 trainings for 4656 farmers and farm women on Natural Farming at all blocks of Alirajpur district during 2022-2023. Along with this, a van with scientist, was taken around the entire block and information was given about the benefits of natural farming and the preparation techniques of products of natural farming viz. Beejamrut, Jeevamrut, Ghana jeevamrut and neemastra etc. This study was conducted at Krishi Vigyan Kendra, Alirajpur (MP) with a sample size of 120 farmers from the training programmes. The data was collected through personal interview method using structural schedule. The study revealed that the training changed farmers' perceptions of natural farming. Before participation in the training programs, only 10% of the respondents had a high level of knowledge of natural farming whereas after participation in the training programs, this figure increased to 32.5 percent. In this study, the most significant difficulties encountered by farmers during the adoption of natural farming were a lack of information about natural farming, difficulty in preparation, and insufficient training at the grassroots level.

EFFECT OF ORGANIC PREPARATIONS ON SOIL FERTILITY UNDER NATURAL FARMING PRACTICES

Harish M. N.*, A. A. Raut, Ravi Dubey and S. R. K. Singh

ICAR-Agricultural Technology Application Research Institute, Madhya Pradesh-482 004, India

**Corresponding author: harish9739@gmail.com*

Modern agricultural practices, heavily reliant on use of chemical pesticides, inorganic fertilizers, and growth regulators, have significantly increased agricultural production. However, this boost has come at the expense of resource depletion, environmental degradation, and a reduction in crop diversity. Recognizing that such modern agricultural practices are not sustainable in the long run, there is a pressing need for interventions that prioritize the conservation of natural resources and the preservation of environmental quality. Natural farming is a livestock-based chemical-free agricultural system that integrates crops, livestock, trees based on agro-ecological principles. The main objectives of natural farming are on-farm resource optimization and recycling, input cost reduction, restoring the soil health by maintaining the soil biodiversity and enhanced productivity. Thus, ICAR has launched a nationwide project titled "Out-scaling of Natural Farming through KVKs" to promote and implement the natural farming practices.

The Natural Farming mainly emphasizes on use of native materials and local preparations loaded with Indigenous microorganisms such as Beejamrit, Jivamrit etc., which restores and enhance the vitality and fertility of the soil. During 2022-23, Natural Farming demonstrations were conducted in an area of 149.24 ha across Madhya Pradesh and Chhattisgarh. The results of pre and post-demonstration analysis of soil samples for soil fertility status revealed encouraging changes. The soil pH showed a decrease of 1.22 per cent however, Organic carbon showed a notable increase of 7.14 per cent. Furthermore, major soil nutrients demonstrated positive changes, with available nitrogen, phosphorus and potassium increasing by 1.05%, 4.02% and 0.11 per cent, respectively. The data pertaining to micronutrient status in the soil revealed that natural farming practices exhibited higher Zn, B, Mn and Cu by 4.4, 5.1, 4.8 and 1.5 per cent; respectively expect Fe which recorded 2.2 per cent decrement as compared to initial levels. This indicates the transformative potential of natural farming practices in enhancing soil biodiversity. As these initiatives steps forward, the amalgamation of natural farming into mainstream agricultural practices holds promise for a more resilient, economically viable and environmentally sustainable future for Indian agriculture.

IMPACT OF FRONT-LINE DEMONSTRATION ON THE YIELD AND ECONOMICS OF FINGER MILLET IN KONDAGAON DISTRICTS OF CHHATTISGARH

Om Prakash*, Suresh Markam, Hitesh Mishra, Priya Sinha and Bindiya Painkra

Krishi Vigyan Kendra, Purvi Borgaon, Dist.- Kondagaon, IGKV (C.G.) 494229

**Corresponding author: kvkkondagaonigkv@gmail.com*

Finger millet (*Eleusine coracana* L.) is one of the most important millets grown extensively in Kondagaon district. An extensive survey of finger millet growers was carried to know the constraints in finger millet cultivation. The lack of suitable HYVs, technical knowhow, INM and plant protection were the four most important factors found to be responsible for low productivity. To fulfil this gap a demonstration was conducted in the tribal farmer's holdings of Kondagaon district, Chhattisgarh, India during kharif 2022 to create awareness among the tribal farmers and to showcase the improved production technologies in finger millet with the collaboration of Agriculture Technology Management Agency (ATMA), Department of Agriculture. The Improved crop management practices viz., promotion of high yielding finger millet variety Indira ragi-2, integrated nutrient management, integrated pest management technologies were demonstrated and compared with the farmers practice followed by tribal farmers in finger millet cultivation. Results indicated that demonstration of finger millet variety Indira ragi–2 with improved crop management practices recorded higher grain yield of 2030 kg/ ha than farmers practice which recorded lower yield of 1790 kg/ha. Adoption of improved crop management practices increased the grain yield of finger millet to the tune of 13.40 per cent compared to farmer's practice. Farmers earned higher net income of Rs.31050 /ha through the demonstration and Rs.26250/ha with farmers' practice. Besides, farmers realized higher benefit cost ratio (2.03) through the demonstration compared to farmer's practice (1.84). Thus, the demonstration of improved variety Indira Ragi - 2 with crop management practices increased the grain yield and net income of the farmers growing finger millet under rain fed condition. In the present study, potential of the new variety and technologies were demonstrated systematically and scientifically in the farmer's field along with farmers practice for further adoption by farming community in large scale.

ECONOMICAL ASSESSMENT OF NATURAL FARMING ON WHEAT CROP PRODUCTION IN CHHATTISGARH

B. P. Tripathi[1*], N. K. Mishra[2] and B. S. Parihar[3]

[1& 3]Krishi Vigyan Kendra, Kabirdham, IGKV, Raipur (C.G.)

[2]College of Agriculture & Research Station Korea, IGKV, Raipur (C.G.)

**Corresponding author: bp_tripathi2007@yahoo.co.in*

Natural farming is an ecological farming approach where farming system works with the natural biodiversity, encouraging the soil's biological activity and managing the complexity of living organisms both plant and animal to thrive along with food production system. Many states of India have taken initiatives for promoting natural farming and at present more than 10 lakh ha. area is covered under natural farming. Considering the importance of the natural farming system, an experiment was conducted with wheat crop through demonstration program in Kabirdham district

of Chhattisgarh during Rabi season 2021-22 and 2022-23 at different location of farmer's field using variety "CG Ambar" under supervision of Indira Gandhi Krishi Vishwavidyalaya, Krishi Vigyan Kendra, Kabirdham (Chhattisgarh). The Economical Assessment of Natural Farming on Wheat Crop Productionwas observed by cost of cultivation and yield data with BC ratio. Conventional farming, showed greater response in all respective parameters with high-cost high benefit ratio compare to natural farming practices but natural farming was found better with 19.98% change in yield and by cost saving of Rs. 3687/ha compare to conventional farming.

ECO - FRIENDLY NATURAL FARMING STRENGTHEN THE SOIL, PLANT, ANIMAL AND HUMAN LIFE

Baijnath Singh Yadav[1*]& B S Gupta [2]

[1]Block Technology Manager ATMA Block and Mungaoli District Ashoknagar

[2]Principal Scientist and Head Krishi vigyan kendra Ashoknagar

**Corresponding author: baijkisu1057@gmail.com*

Organically rich and sound soil is the key factor for sustainability of agriculture. Farming practices differ mainly based on soil inputs and crop protection measures. In conventional chemical farming practice, unjudicial use of chemical fertilizers, pesticides, and herbicides destroy the beneficial soil micro flora change the soil nature and also contribute to the high crop production cost. Heavy metals from the polluted soil may enter the food chain in significant amounts and show adverse health effects. The essence of natural farming is to minimize the external inputs to the farm land, and nurture the soil fertility. It was shown that enrichment of soil occurs through propagation of beneficial soil microbes. It encourages the natural symbiosis of soil micro flora and crop plants. Mulching can maximize the moisture content in the soil, forms the cover for the earthworms and minimizes the weed propagation. This study reviews the concepts of natural farming in the context of its eco-friendly nature and sustainability. soil health, plant, animal and human beings are mutual dependent on each other. Enrichment of natural resources in soil ultimately positive effect on plant, animal and human health. Awareness programme and live demonstrations of natural farming are essential for sensitization of farmers for adoption of natural farming is needful today. Natural farming overcome the negative effects of chemical farming.

NATURAL FARMING AWARENESS PROGRAMME FOR CAPACITY BUILDING OF FARMERS BY KVK, BHATAPARA

Swati Thakur Mirjha[1*], Angad Singh Rajput[2] and Panch Ram Mirjha[3]

[1]Subject Matter Specialist and [2]Senior Scientist & Head, Krishi Vigyan Kendra (IGKV), Bhatapara (Chhattisgarh)

[3]Assistant Professor (Agronomy), DKS CARS (IGKV), Bhatapara (Chhattisgarh)

**Corresponding author: thakur.swati16agron@gmail.com,*

Natural Farming is a chemical-free farming system rooted in Indian tradition enriched with modern understanding of ecology, resource recycling and on-farm resource optimization. It is considered as agro-ecology based diversified farming system which integrates crops, trees and

livestock with functional biodiversity. One daytraining cum awareness programme on natural farming was conducted by KrishiVigyan Kendra, Bhatpara during 2022-23 in different villages of all five blocks of Baloda Bazar- Bhatapara district. Detailed information including method demonstration was given to farmers regarding preparation of Jeevamrit, Bijamrit, Ghanjeevamrit, Panchgavya, Agni Astra, Brahmastra, Neemastra, Dashaparni Ark, SaptaDhanyankur etc. Farmers were told that at the time of Palewa and in the standing crop, Jeevamrit, Ghanjeevamrit, Panchgavya etc. are used for crop nutrition. Beejamrit is used for seed treatment and Agni Astra, Brahmastra, Neemastra, Dashaparni extract is used to protect against insect-pests and diseases. Practices to be followed in natural farming at farmer's field for nutrient management such as maintaining of biodiversity, crop rotations, intercropping, mulching and practicing whapsa etc. were also told to farmers. Literatures related to natural farming were distributed among farmers.

COST EFFECTIVE AGRICULTURE: ASSESSING BENEFITS IN NATURAL FARMING PRACTICES

A. A. Raut*, Harish M. N., Sanjana Shrivastava and S. R. K. Singh

ICAR-Agricultural Technology Application Research Institute, Jabalpur, Madhya Pradesh

**Corresponding author: ajay.devcom@gmail.com*

Natural farming is an ecological farming approach where farming system works with the natural biodiversity encouraging biological activity in soil and managing the complexity of living organisms to thrive along with food production system. Natural farming does not use external inputs rather use on-farm produced microbial formulation for seed treatment, Jivamrita as microbial inoculants for soil enrichment, mulching and exploring botanical concoctions. National level project on Out Scaling of Natural Farming through KVKs is being implemented through KVKs in 48 Districts of Madhya Pradesh and Chhattisgarh to assess the Natural Farming effectiveness under field situation in different regions. Under demonstration component of the project 381 demonstrations were conducted during 2022-23 covering 149.24 ha in cereals, pulses, oilseed and vegetables. Results indicated yield reduction under natural farming in comparison to conventional farming. Crop wise analysis reflected that yield decrease was highest in rice 26.20 per cent followed by mustard (23.32%), wheat (18.30%), chick pea (17.68%) and onion (11.46%). Despite reduction in yield, there was a noteworthy increase in the Benefit-Cost ratio across different crops. This improvement can be attributed to the reduction in cost of cultivation and better price realization under natural farming. These demonstrations serve as practical learning experiences allowing farmers to witness firsthand the challenges and benefits of natural farming techniques. While the reduction in yield may raise concerns during initial years, however BC ratio highlights economic viability of natural farming emphasizing long-term sustainability and reduced dependency on external inputs. Profitability of natural farming varies across crops and can be influenced by factors such as climate, soil, crop specific management practices, costs involved and prices. The findings not only showcase the potential of natural farming but also contributes valuable insights for farmers to make informed decisions about adopting these ecologically sound practices.

EXTENSION SERVICES IN PROMOTING ORGANIC FARMING: A MULTIFACETED APPROACH

Venkteshwar Jallaraph*, Harish M. N. and Ravi Dubey

ICAR-ATARI, Zone-IX, Jabalpur

**Corresponding author: vjallaraph@gmail.com*

The global agricultural landscape is witnessing a transformative shift towards sustainable and environmentally conscious practices, with organic farming emerging as a prominent alternative to conventional methods. At the forefront of this transition lies the pivotal role played by agricultural extension services in promoting and fostering the adoption of organic farming, encompassing educational, economic, and technological dimensions. Extension agents serve as crucial conduits for disseminating knowledge about organic principles, emphasizing the importance of sustainable soil management, crop rotation, and integrated pest management strategies. Through targeted workshops, training programs, and personalized interactions with farmers, extension services become instrumental in empowering agricultural practitioners with the requisite information to make informed decisions in transitioning to and sustaining organic agricultural practices. The economic viability of organic farming is a critical factor influencing its widespread adoption. Extension services actively support farmers in navigating the intricate landscape of organic certification processes, ensuring adherence to standards that enhance market access. Moreover, extension agents play a significant role in establishing connections between organic farmers and markets, facilitating the development of robust value chains. This linkage ensures that farmers receive fair prices for their produce, thereby making organic farming a financially sustainable venture. In the rapidly evolving agricultural sector, staying abreast of technological advancements is imperative.

Extension services play a vital role in disseminating information about innovative and sustainable technologies that can enhance the efficiency and productivity of organic farming. From precision farming techniques to the utilization of biopesticides and organic fertilizers, extension agents serve as conduits for the latest developments, empowering farmers to integrate cutting-edge technologies into their organic farming practices. The role of extension services in promoting organic farming is indispensable and multi-dimensional. Through education, economic support, and technological guidance, extension services contribute significantly to the success and sustainability of organic agriculture. As the global community continues to emphasize the importance of environmentally friendly and socially responsible farming practices, the role of extension in facilitating the organic farming transition becomes increasingly critical for the well-being of both farmers and the planet.

IMPORTANCE OF EXTENSION SYSTEM TO PROMOTE NATURAL FARMING AMONG FARMERS

Satish Kumar Samdariya[1]* and Sarvesh Kumar[2]

[1]Young Professional-II, ICAR-ATARI, Zone-IX, Jabalpur (MP)

[2]Scientist, JNKVV, KVK-Harda (MP)

**Corresponding author: dnkcc87@gmail.com*

The activities which are works with the farmers and their families and witnessed to improve their economic and social conditions of their lives and to develop their ability to take responsibility

for their future development called extension activities. The natural farming works with objectives to make farming viable and aspiration by increasing net incomes of farmers on account of cost reduction, reduced risks, similar yields, incomes from intercropping, increasing crop intensity along with availing fair price of the crop grown. Natural Farming may also helpful to offers a solution to various problems, such as food insecurity, farmers' distress, and health problems arising due to pesticide and fertilizer residue in food and water, global warming, climate change and natural calamities. The natural farming may also supportive to minimizes human labour and in receiving biodiversity of agricultural ecosystems. As the natural farming does not use any synthetic chemicals, health risks and hazards are eliminated. The food has higher nutrition density and therefore offers better health benefits. The impacts and importance of different extension activities and extension programs would be justified by increasing farm income and productivity, boost food production, enhance food safety assurance and enable surplus food export to other countries by spreading awareness about natural farming among farming community for sustainable health and income of farmers.

INDIGENOUS TECHNICAL KNOWLEDGE (ITK) CAN PAVE THE WAY FOR GOOD NATURAL FARMING PRACTICES

S. K. Pandey*, Anil Kurmi, Suryakant Nagre and Anita Thakur

Krishi Vigyan Kendra, Indira Gandhi National Tribal University, Amarkantak

**Corresponding author: anilkvk@igntu.ac.in*

ITK refers to the knowledge and skills passed down through generations within a specific community or culture. This traditional, local knowledge is specific to a particular geographical area and has been acquired by farmers through observation, trial and error, and traditional wisdom. It has played a crucial role in the social, cultural, and economic development of the community. In agriculture, ITK has been used since ancient times to address various challenges and improve farming practices. This knowledge includes various sustainable farming techniques such as relay cropping, mixed cropping, crop rotation, intercropping, using natural fertilizers and traditional pest control methods etc. These practices not only promote soil health and biodiversity but also reduce the use of chemicals and contribute to a healthier ecosystem. Its application has led to resource conservation, cost reduction, pollution control, and preservation of natural resources. ITK based practices are nature-based and do not harm the environment, making them essential for natural farming. By incorporating ITK into modern agricultural practices, we can not only improve the productivity and sustainability of our farming systems but also preserve and honor indigenous traditions and cultures. Furthermore, ITK can also play a crucial role in adapting to changing climate conditions, as indigenous communities have a deep understanding of their local environments and have developed farming practices that are resilient to these changes. Therefore, incorporating ITK into modern agriculture can pave the way for good natural farming practices that are beneficial for both the environment and the well-being of communities.

EVALUATION OF NATURAL FARMING PRACTICES ON CROP YIELD AND FARMERS INCOME

Diproshan Banjara[1*], Anil Kumar Thakur[2] and Praween Nishad[2]

[1]I/c Senior Scientist & Head and [2]Subject Matter Specialist

Krishi Vigyan Kendra, Dantewada, IGKV, Raipur

**Corresponding author: diproshanbanjara@gmail.com*

Natural farming (NF) is an innovative, eco-friendly and one of the most potential crop cultivation methods to grow crops without using chemicals to drastically cut down production costs by reducing dependence on the market for the purchase of critical inputs. Krishi Vigyan Kendra, Dantewada has trained 40 farmers by conducting 8 demonstrations on NF under the "Out scaling of NF through KVKs" project on different crops. In order to better understand the practice followed in NF as well as the cost saving and income gain by the NF farmers, the study was undertaken during *rabi* season 2022-23, covering 8 NF adopted farmers and 8 Organic Farming (OF) adopted farmers in Dantewada district. Using low-cost situ bio-stimulant *Jeevamrit*, *Ghanjivamrit*, *Bijamrit* and *Neemastra*, applied foliar or in soil by flooding through irrigation increases the microbial activity of the soil, helps in rejuvenating the soil. The result of the present study revealed that the OF-adopted farmers who applied FYM harvested better crop yields than NF adopted farmers. The crops such as chickpea (cv. RVG-202), green gram (cv. Shikha), tomato (cv. Laxmi) and field pea (cv. IPEF-10-12) were grown under NF was shown significant reduction in yield by 20-21%, 26-28%, 17-19% and 10-12%, respectively and also fetches less profit by 21-24%, 37-62%, 16-19%, 10-13% respectively as compared to OF grown crops. However, a significant reduction in the cost of cultivation of all the crops was observed for NF component.

ASSESSMENT OF NATURAL FARMING SYSTEM OF AGRICULTURE IN WHEAT *(TRITICUM AESTIVUM L.)* IN WEST NIMAR OF MADHYA PRADESH

Santosh Patel[1*], G. S. Kulmi[2], R. K. Singh[3], Sanjeev Verma[4] and Vinod Mittoliya[5]

RVSKVK – Krishi Vigyan Kendra, Khargone (M.P.), India 451001

**Corresponding author: santoshagronomy@gmail.com*

Wheat (*Triticum aestivum* L.) is grown in 53 % area (2,21,950 ha) of total cultivated area (416640 ha) with production and productivity in tune of 8755930 m t and 3945 kg ha^{-1} respectively. It is grown in medium black soils found in the district. A field trial was laid out during 2022-23 on farmers field of adopted villages of Krishi Vigyan Kendra, Khargone (M.P.) to assess the natural farming in comparison to conventional farming practices in wheat variety "GW 322" grown in nimar conditions. Recommended practices of Beejamrit (50 g kg^{-1} seed), Ghanjeevamrit (500 kg ha^{-1}), Jeevamrit, Kunap jal, Amrit pani (500 l ha^{-1}), Neemastra, Brahmastra, Dashparni ark (25 l ha^{-1}), Sonthashtra (12 l ha^{-1}), Khatti Chhachh (6 l ha^{-1}), Mulching (5 t ha^{-1}) and Vaphsa were applied in field trial on natural farming in wheat. All recommended practices were applied in conventional farming treated as farmer practice. Results of one year field trial indicate that natural farming system recorded 38.16 % reduction (28.59 q ha^{-1}) in mean grain yield over conventional system (39.50 q ha^{-1}) of wheat. Similarly, 38.13 % reduction (Rs. 56471 ha^{-1}) in mean gross return ha^{-1} was recorded under natural

farming system over conventional farming (Rs. 78007 ha^{-1}). Similarly, 30.28 % lower mean net return Rs. 40592 ha^{-1} was in natural farming over conventional farming (Rs. 52364 ha^{-1}). However, 61.49 % (Rs. 9764 ha^{-1}) cost of cultivation (Rs. 15879 ha^{-1}) was reduced under natural farming as compared to conventional farming (Rs. 25643 ha^{-1}). Reduction (61.49 %) in cost of cultivation was resulted in 17.10 % higher B:C ratio (3.56) under natural farming system as compared to conventional farming (3.04 B:C ratio) of wheat. Farmers perception to words natural farming is positive and felt eco friendly agriculture technology for future. However, many constraints have been experienced at farmers level like poor availability of inputs, farmers feel complexity in preparation of inputs, lack of suitable market outlets for organic products and no policy for minimum support price (MSP) is available for the organic products in the country.

STUDY OF NATURAL FARMING OF CHICKPEA *(CICER ARIETINUM)* KHARGONE DISTRICT OF MADHYA PRADESH

V. K. Mittoliya[1*], G. S. Kulmi [2], Santosh Patel[3] , Sanjeev Verma[4], R. K. Singh[5] and S. K. Tyagi[6]

[1]Senior Technical Officer (Agronomy), [2]Senior Scientist & Head (Agronomy), [3]Technical Officer (Agronomy), [4]Scientist (Soil Science), [5]Scientist (Extension Education), [6]Scientist (Horticulture), RVSKVV-KVK, Khargone (M.P.)

**Corresponding author: deepmittoliya@gmail.com*

Chickpea (*Cicer arietinum*) is very important pulse crop of Khargone district growing in 1,24,530 haareaof total Rabi cropped 326878 ha area with production and productivity in tune of 2465690 Quintal and 19.83 kg ha^{-1} respectively. It is grown in all soil types (Black cotton soil, light black Sandy and loam soil,) found in the district. A field trial was laid out during 2022-23 at 7 farmers field of Krishi Vigyan Kendra, Khargone (M.P.) on study of natural farming and Chemical farming practices in wheat variety "RVG-202". Recommended practices of Beejamrit (50 g kg^{-1} seed), Ghanjeevamrit (500 kg ha^{-1}), Jeevamrit, Amrit pani (500 l ha^{-1}), Neemastra, Brahmastra, Dashparni ark (25 l ha^{-1}), Khatti Chhachh (6 l ha^{-1}), Mulching (5 t ha^{-1}) and Vaphsa were applied in natural farming system for demonstration. All recommended practices were applied in Chemical farming for farmer practice. Result of one yearfield trial indicate that natural farming system recorded 15.34 q ha^{-1} grain yield over chemical farming 16.0 q ha^{-1} of chickpea. Similarly, (Rs.81854 ha^{-1}) lower gross return was recorded under natural farming system as compare to Chemical farming (Rs. 86899 ha^{-1}). However, cost of cultivation (Rs. 12857 ha^{-1}) was minimized under natural farming over Chemical farming (Rs. 19000 ha^{-1}) and obtained reduced net return Rs. 67900 ha^{-1} in natural farming over Rs. 68997 ha^{-1} in Chemical farming. Higher B:C ratio (6.36) under natural farming system as compared to Chemical farming 4.57 was observed under study due to reduction (47.7%) in cost of cultivation. Farmers were convinced and not having any type of reluctant views with natural farming of chickpea in the Khargone district. However, many constraints have been experienced at farmers level like poor availability of inputs, complexity in preparation of inputs, lack of suitable market for natural farming chickpea and no minimum support price fixed for the natural farming products.

NATURAL FARMING: A WAY TOWARDS SUSTAINABLE EARTH

Twinkle Handa[1*], Dr. M. L. Sharma[2], Shubham Kumar[3] and Hem Prakash Verma[4]

[1,3,4]Ph. D. Scholar and [2]Professor and Head

Department of Agricultural Extension, College of Agriculture, IGKV, Raipur

**Corresponding author: twinstartwinkle0503@gmail.com*

In the concurrent scenario of depleting soil fertility and increase in pollution, natural farming serves as an antidote by envisaging an approach in which usage of external inputs is minimized instead sustainable and ecologically friendly practices are done to maintain soil fertility, enhance biodiversity and promote overall environment health. Post-Green Revolution fertilizer usage have risen exponentially to 32.54 Mt. in 2020-21 which has also led to depletion in soil fertility, loss of flora and fauna and decrease in production in perspective of cultivated area. Although Green revolution and self –sufficiency in food grain production is the need of the hour in perspective of growing human population but that shouldn't come at the expense of mother nature. To fulfill these objectives GOI had launched various schemes such as Zero Budget Natural Farming, Paramparagat Krishi Vikash Yojana, Soil Health Card scheme, NMSA, National Mission on Green India. These schemes focus on minimizing usage of external inputs by promoting natural farming in the form of incentives and financial assistance to farmer in the form of grant assistance. Natural farming works on the principles of no till farming, cover-cropping and mulching, crop diversification, avoiding chemical fertilizers and minimizing external inputs. A classic case study is of Mr. Subhash Palekar, he started the ZBNF concept and made successful in south India. 523,000 farmers have already converted to ZBNF in Andra Pradesh and 1 lakh farming houses in Karnataka. This concept works on four pillars they are jeevamrith, bijamrith, mulching, and soil aeration. These four concepts help better soil health, increased microbial population, and enhanced crop yield. Different astras used to control pest infestation in natural farming. It can be inferred that natural farming is the need of the hour to protect our future generation from starving to death.

NATURAL FARMING: CHANGING THE TUNES DO CHANGE THE FORTUNES OF FARMING COMMUNITY ?

Gurava Reddy Kotapati

Professor (Agricultural Extension), Acharya N. G. Ranga Agricultural University, Lam, Guntur, Andhra Pradesh

Corresponding author: reddy.gurava@angrau.ac.in

Natural farming is an agricultural approach that emphasizes working with natural processes and avoiding the use of synthetic chemicals and external inputs. Proponents argue that this method can bring about positive changes in the fortunes of the farming community in several ways sustainability, cost reduction, improved soil heath, biodiversity conservation, positive environmental impact, better market demand. However, it's important to note that the success of natural farming can be influenced by various factors, including climate, crop types, and local conditions. Additionally, transitioning from conventional to natural farming may require initial investments and a period of adjustment for farmers. While some studies and anecdotal evidence support the benefits of natural farming, opinions on its effectiveness can vary. Initiated in 2015, the Andhra Pradesh Community-managed Natural Farming (APCNF) programme is working towards transforming farmers to nature-

based agriculture. The programme was initiated on a pilot-basis in 704 villages in 2016. Till date, the programme has reached 3730 Gram Panchayats across 658 Mandals (sub district units) in the state. As per the reports, the area under APCNF practices increased to 2,88,898 ha involving 6,30,441 farmers in 2021-22. As with any agricultural approach, its impact can depend on the specific context and the commitment of the farming community to adopting and adapting to these practices. This paper discusses on the various claims of the natural farming in terms vertical and horizontal growth and strategies towards organic growth in natural farming

ASSESSING THE IMPACT OF NATURAL FARMING PRACTICES ON YIELD AND BENEFITS OF WHEAT *(TRITICUM AESTIVAM)*

D. K. Tiwari*, G. R. Ambawatia, S. S. Dhakad, Mukesh Singh and Gayatri Verma

RVSKVV, Krishi Vigyan Kendra, Shajapur (MP)

**Corresponding author: tiwaridk78@gmail.com*

Natural Farming (NF) is contemplated by its protagonist as one of the most potential crop cultivation methods to drastically cut down production costs by reducing dependence on market for purchase of critical inputs. Being considered as an agroecologically diverse farming practice, it brings hosts of ecological and social benefits, although, there are two school of thoughts- opposing each other on the efficacy of its practices. In order to better understand the practice followed in NF as well as the cost saving and income gain by the NF farmers, the study was undertaken in the District Shajapur of Madhya Pradesh during Rabi season 2022-23 covering 8 NF-adopting farmers and 8 non- NF farmers in Shajapur District of Madhya Pradesh, respectively. Though there are certain practices prescribed in natural farming, the most adopted practice is use of *Jeevamritha*, *Beejamritha* and *Ghanajeevamritha for Nutrient management and* Nimastra and Dasparni ark for plant protection. Significant reduction in cost of cultivation of wheat was observed. NF-farmers harvested lower yield in Wheat compare to non-NF farmers. Thus, natural farming may not look as yield enhancing farming practices, but definitely increases farmers' income through cost reduction and long-term sustainability.

ASSESSMENT ON YIELD AND ECONOMICS OF CHICKPEA *(CICER ARIETINUM L.)* UNDER NATURAL FARMING OF MALWA PLATEAU OF MADHYA PRADESH

D. K. Tiwari*, G. R. Ambawatia, S. S. Dhakad, Mukesh Singh and Gayatri Verma

RVSKVV, Krishi Vigyan Kendra, Shajapur (MP)

**Corresponding author: tiwaridk78@gmail.com*

Chickpea is most important pulse crop. The per capita net availability per day of pulses is still low in India ranging from 42-47 gram. The field experiment was conducted under On-Farm Testing (OFT) at the farmers field of Shajapur district of Madhya Pradesh in Rabi season of 2022-23 to assess the performance of chemical farming, organic farming and natural farming practices in chickpea under Malwa plateau of Madhya Pradesh. The experiment was laid out in randomized block design (RBD) with 3 treatments and replicate 10 farmers field the chemical farming all recommended practices applied. Under organic farming the seed are treated with *Rhizobium* + PSB is 5 gram per kg seed,

Tricoderma viridi 5 g per kg seed, Vermi compost 5 t Per hectare, neem oil 2.5 l per hectare. Under natural farming Beejamrit (50 g per kg seed), Ghanjeevamrit (250 kg Per hectare), Jeevamrit (500 litre Per hectare), Dashparni Ark 25 litre Per hectare, Sonthastra (12 litre per ha) and mulching 5 ton Per hectare were applied. The results showed that natural farming (12.8 q/ha), organic farming (12.2 q/ha), has lower yield compared to chemical farming (16.7 q/ha) of chickpea. Under natural farming (Rs. 80400/ha), organic farming (Rs. 64600/ha), the net return was higher over chemical farming (Rs. 45500/ha). Similarly, B:C ratio of natural farming (3.65), organic farming (2.25) is more compared to chemical farming (1.30) of chickpea. Thus natural farming may not look as yield enhancing but definitely increases farmers income through cost reduction and improving soil health. So by adopting this farming every individuals of the country will be able to get chemical free food and save the people from many diseases.

EFFECTIVENESS OF CUSTOMIZED NATURAL FARMING PRACTICES ON PRODUCTION AND PROTECTION MANAGEMENT IN RICE

Manukonda Srinivas*, M. Ramabhadra Raju, B. Anusha, Ch. Sreenivas, ADVLSP Anand Kumar and M. Bharathalakshmi

Acharya N. G. Ranga Agricultural University (ANGRAU), Regional Agricultural Research Station, Maruteru, West Godavari District, Andhra Pradesh

**Corresponding author: manukonda.s@angrau.ac.in*

A customized farming approach advocating the use of farm yard manure, vermicompost, NADEP compost, dung from milch animals, using inoculants like VAM, PSB and avoiding the use synthetic chemical fertilizers, pesticides, herbicides, weedicides with an aim to enhance soil organic matter, soil fertility, water holding capacity of soils, and enhances bio diversity (above ground and below ground). The approach referred to as APCNF is gaining popularity in the recent past in Andhra Pradesh state owing to ecofriendly management practices. In view of the limited availability of data on sheath blight disease management in organic farming, a comparative of field trial of Andhra Pradesh Community based Natural Farming (APCNF) practices Vs Integrated Crop Management (ICM) practices of ANGRAU was evaluated during *Kharif* 2022 and *Rabi* 2022-23 in Delatic alluvial soils of Regional Agricultural Research Station, Maruteru, West Godavari district.

During the first year of study, interventions for sheath blight management in APCNF included, periodic application of jeevamrutham in combination with egg amino acid, sour buttermilk, application of consortium of PSB, VAM and other beneficial organisms. However, need based application of hexaconazole 5SC @ 2.0 ml/L (1-2 sprays) was adopted in ICM plots. Results of the study indicated more sheath blight incidence at 35-45 days after planting (DAP) in APCNF system recorded 24.7% sheath blight incidence and 14.6% sheath blight severity as against 2.0% incidence and 1.4% severity in ICM plots. After two scheduled sprays in ICM plots at 75 DAP during *Kharif* 2022 and seven interventions in APCNF plot, the incidence peaked at 60.5% and severity at 44.5% in APCNF system as against 5.2% incidence and 2.3% severity in ICM plots. Whereas, during *Rabi* 2022-23, early onset of sheath blight disease was recorded in APCNF plots, the disease peaked during first week of April 2023 in APCNF plots. Chemical intervention (Hexaconazole spray) resulted in reduction in sheath blight incidence and severity in ICM plots. Whereas, false smut incidence was higher (1.5%) in ICM plots.

During both the seasons, Soil microbial enumeration study revealed more buildup of bacterial population in ICM plots. In terms of fungal population, more fungal counts were recorded in APCNF plots throughout the crop growth period. Although minor incidence of other diseases was recorded, comparatively more bacterial leaf blight, neck blast and false smut were recorded in ICM plots compared APCNF practice. Similarly, the incidence rodent damage also recorded comparatively higher in ICM plot (2,74% and 8,59%) than APCNF plot (Nil and 1.21% at 45 DAP and 57 DAP during kharif season. In case of lodging character, ICM plot prone to lodge 18.7% compared APCNF plot which showed non-lodging character. Yield advantage of 35.4% and 31.4% was recorded in ICM plots during *Kharif* and *Rabi* 2022-23 respectively. The study shows that, APCNF with 365 DGC have an advantage of lodging character, escaping rodent damage in addition to some of the pest and disease incidences even under unfavourbale climatic situations.

EFFECT OF NATURAL FARMING PRACTICES ON CROP YIELD AND INCOME OF THE FARMERS OF GARIYABAND DISTRICT

Shalu Abraham*, Manish Chourasia, Eshu Sahu and Tushar Mishra

Krishi Vigyan Kendra, Gariyaband

**Corresponding author: kvk.gariaband@igkv.ac.in*

Natural farming is considered as one of the most potential crop cultivation method to achieve dual goal of enhancing soil health and minimizing production cost. In order to study the effect of natural farming practices on crop yield and income gain by the farmers, demonstration of natural farming practices on Chickpea and Wheat crop was conducted by Krishi Vigyan Kendra, Gariyaband during the rabi season of 2022-23 in Khamharipara and Mardakala villages (Latitude- 20° 57′ 46″, Longitude 81°,53′ 05″) of Gariyaband District. Majority of the farmers of these villages use very less chemical fertilizers. After frequent field visits and interaction with the farmers, 8 farmers were selected to conduct demonstration on natural farming practices, 4 in chickpea crop and 4 in wheat crop. The identified farmers along with other farmers of these villages were then trained on the natural farming practices by KVK scientists. At the same time various awareness programmes, literature distribution and method demonstrations were also carried out in these and adjoining villages. The practices adopted under natural farming were seed treatment with Beejamrit, application of Ghanjeevamrit, Jeevamrit and Neemastra and Agniastra as plant protection measure. Since this was the first year of demonstration a significant yield advantage was not visible in both Chickpea and Wheat crop under Natural Farming. An average yield of 12.26 q/ha and 16.17 q/ha was recorded in Chickpea and Wheat crop under Natural farming whereas in the conventional practice an average yield of 13.88q/ha and 23.82q/ha was achieved consecutively in both the crops. Higher net returns of Rs. 5863/ha and Rs.8053/ha in chickpea and wheat crop was achieved in the conventional practice over Natural farming practices. Though the cost of cultivation was less in the demonstrations under natural farming practice but the crop yield and farmers' income was higher in the conventional method owing to the same market price of the produce. KVK Gariyaband has conducted demonstrations on Natural farming in the same farmers' field during the current Rabi season also, the results of which are awaited. More trials are needed to convince the farmers regarding the long term sustainability of natural farming practices and associated risks to farmers' finances, health and environmental pollution due to intensive use of chemical fertilizers and pesticides.

ANALYSIS OF ECONOMICS, YIELD AND GROWTH ATTRIBUTES OF SOYBEAN *(GLYCINE MAX L.)* UNDER NATURAL FARMING SYSTEM IN AGAR MALWA DISTRICT OF MADHYA PRADESH

R. P. S. Shaktawat* and A. K. Dixit

RVSKVV – Krishi Vigyan Kendra, Agar Malwa (MP) 465441

**Corresponding author: rpssbkn@yahoo.co.in*

A field experiment was conducted during kharif 2023 by Krishi Vigyan Kendra, Agar Malwa, Madhya Pradesh to study the analysis of economic, yield and growth attributes of soybean (*Glycine max* L.) under natural farming system. The experiment was conducted at 10 farmer's field using JS 9560 variety of soybean with three treatments i.e. chemical, INM and natural farming having large plot size 0.1 ha for each treatment. Application of Bijamrit, Jivamrit, Ghan-jivamrit, Brahmastra and Agniastra as a natural farming treatment significantly reduced the yield of soybean crop by 2.14% as compared to chemical cropping of soybean (14.30 q/ha). Further, this treatment enhanced the vegetative growth and increment in the B:C ratio of crop as compared to chemical cropping of soybean (control). Natural farming components reduced the cost of cultivation of crop.

NATURALLY MANURE OF FISH POND BY INTEGRATION OF FISH CUM DUCK FOR COST REDUCE AND LIVELIHOOD SECURITY

Manisha Khaparde*, Ishwar Singh, Premlal Sahu, Amit Kumar Sinha and Shakti Verma

Krishi Vigyan Kendra, IGKV, Dhamtari, Chhattisgarh, India

**Corresponding author: mahi.khaparde@gmail.com*

Dhamtari district of Chhattisgarh has abundant scope for agriculture and allied sector. Due to lack of scientific knowledge and awareness, traditional monoculture system of fish and duck farming is prevalent in the district yet. To improve the productivity as well as generate more income of farmers from various crops practiced in a specific area for a certain time, the integrated approach of fish cum duck culture was carried out in farmer's field. The experiment was conducted at Dhamtari district of Chhattisgarh to Demonstrate fish cum duck culture on physico-chemical, biological parameters of pond ecosystem and overall fish production in the ponds. This trial was conducted during three successive years 2021-2023 for the period of 10 months. The pond was stocked with fingerlings @6000 /ha of indian major carps (*Catla catla, Labeo rohita, Cirrhinus mrigala* in a ratio of 4:3:3) to utilize the maximum energy in the pond through polyculture. Khaki Campbell breed of ducks was used for the integrated system to fulfill the purpose of obtaining the meat and for deliver the excreta into the ponds during wild grazing. Under such cultural practice at village level no supplementary feed was given to the fish while the ducks were fed with fresh kitchen leftovers and agricultural by products as kanki (broken cereal grains), kodha (rice bran) which are easily available commodities in rural areas. The study revealed that water quality parameters *i.e.* pH, dissolved oxygen, alkalinity were significantly higher in integrated pond than control pond (without ducks). Further plankton levels (Phyto and zooplankton) were also improved considerably in integrated pond and naturally manuring of fish pond. Economic analysis of fish cum duck culture revealed that total net return from recommended practices were Rs.110,000 ha^{-1}. The net returns in farmer's practices were

Rs. 57400 ha^{-1}. The average BCR were 2.15 in recommended practices as compared to 1.69 in farmer's practices and additional income of duck meat of Rs. 88500 and duck egg Rs. 17130 and the consumption of fish, duck meat and duck eggs add to food quality and livelihood security of the resource-poor family and input cost reduce. The study has concluded that the integrated fish cum duck farming system could tackle the issues of sustainability, livelihood security and income generation effectively.

EFFECT OF NATURAL FARMING MANAGEMENT PRACTICES ON PHYSICO-CHEMICAL PROPERTIES OF SOIL AND YIELD PERFORMANCE OF CHICKPEA

Angad Singh Rajput*, Pradeep Kashyap and Savita Rajput

Krishi Vigyan Kendra, Bhatpara, Chhattisgarh

**Corresponding author: kvk.bhatapara@igkv.ac.in*

Agriculture in India has witnessed several technological advancements. 'Green Revolution' (GR) technology-led intensification of agriculture transformed India from food scarce country to food surplus. However, it also led to adverse impacts like, soil degradation, biodiversity losses, rising cost of cultivation, etc. Rising application of chemical fertilizers and pesticides with stagnating/ declining crop productivity dovetailed with uncertain market conditions and climate change effect resulted into unremunerative agriculture. Natural Farming is purported to be a disruptive farm practices addressing major concerns of farmers of rising cost of production. Keeping this in mind a field experiment was conducted to assess the effect of natural farming management practices on physico-chemical properties of soil and yield performance of chickpea at ten farmers field at village Mendhra during rabi 2022-23. Natural Farming management practices was compared with conventional farmers practice. As per the results of initial soil samples analysis the experimental sites are neutral in pH (7.2), normal EC (0.4 dsm^{-1}), low in organic carbon (0.47%), low in available Nitrogen (163 kg ha^{-1}), low in available Phosphorus (11.13 kg ha^{-1}) and high in available potassium (359.2 kg ha^{-1}). Results revealed that grain yield was found maximum in conventional method (13.2 q ha^{-1}) however it was statistically at par with natural farming management practices (12.8 q ha^{-1}). There are no any significant changes in soil physico-chemical properties as observed during first year. However net income was found higher (61050 Rs./ha) as compared to conventional method (51350 Rs./ha.). Based on the first year results it can be concluded that natural farming management practices could be effective in terms of cost of cultivation and net returns. Grain yield was not higher as compare to conventional practices but there is substantial reduction in input cost that resulted into better profitability for natural farming practicing farmers.

STUDIES ON ASSESSMENT OF *JIVAMRAT* AND *BEEJAMRAT* FOR DISEASE MANAGEMENT IN SOYBEAN *(GLYCINE MAX)* CROP GROWN AT THE TRIBAL AREA OF NARMADA VALLEY ZONE OF MADHYA PRADESH

Dharvendra Singh*, Narendra Kumawat and Dayaram Chouhan

Krishi Vigyan Kendra (RVSKVV), Manawar – 454 446 (MP)

**Corresponding author: kvk.manawar@rvskvv.net*

A total of 10 on farm testing (OFT) on *jivamrat* and *beejamrat* for disease management in Soybean (*Glycine max*) crop were conducted by KVK, Manawar during 2022-23 across 2 tribal villages of Narmada valley zone of Madhya Pradesh for economic benefits of improved practices under natural farming system. The result of the on farm trial showed that application of jivamrat and beejamrat significantly increase the soybean ***(****Glycine max)* productivity by lowering incidence of disease in soybean. The significantly higher yield (1494.0 kg/*ha*) of soybean was recorded under recommended practices as compared to farmers' practice (1146.0 kg/*ha*). The increase in the on farm trial yield over farmers' practice was 30.36%. Simultaneously higher net returns (Rs.53550/*ha*) and B:C ratio (2.7) were recorded in on farm trial as compared to farmers practices (net return of Rs. 37530 and B:C ratio of2.3).

EFFECT OF NATURAL FARMING PRACTICES ON GROWTH AND YIELD OF PIGEONPEA UNDER PIGEONPEA + GREENGRAM CROPPING SYSTEM

P. Venkata Rao*, V. Sailaja, M. Sreekanthand and M. V. Ramana

Regional Agricultural Research Station, ANGRAU, Lam-522034, Guntur, AP, India

**Corresponding author: venkatraoptn@gmail.com*

Natural farming is related to organic farming, sustainable agriculture and agroforestry, but should be distinguished from biodynamic agriculture. The system exploits the complexity of living organisms that shape each particular ecosystem. Fukuoka saw farming both as a means of producing food and as an aesthetic or spiritual approach to life, the ultimate goal of which was, "the cultivation and perfection of human beings". Natural farming is a closed system, one that demands no human-supplied inputs and mimics nature.

A field experiment on "Effect of natural farming practices on growth and yield of pigeonpea under pigeonpea + greengram (1:7) cropping system has been conducted during *rabi* (2018-19 to 2022-23) at RARS, ANGRAU, Lam, AP on natural farming with three treatments *viz*.,T_1- Integrated crop management (ICM),T_2- Organic farming and T_3- Palekar's concept of natural farming package (*Beejamrutham*, *Ghana jeevamrutham*, Liquid *jeevamrutham*, *neemasthrum, agniasthrum, brahmastrum, panchagavya,*sour butter milk *etc*.) the soil of the experimental field was deep black clay loam in texture and slightly alkaline in reaction. The soil was medium in organic carbon, available phosphorus and high in available potassium but low in available nitrogen. Pooled data revealed that the maximum grain yield of redgram equivalent yield (1436 kg/ha) was observed with adoption of ICMpractice and it was followed by organic farming (913 kg/ha) and Palekar's concept (686 kg /ha).

The gross returns and net returns were more with ICM (Rs.93697/- and & Rs. 49805/-) than other two treatments organic farming (Rs. 60087/- and & Rs.21272/-) and Palekar's concept (Rs.45234/-and & Rs.12339 /-). Similarly, the B:C ratios for ICM, organic farming and Palekar's concept are in the order of 1.16, -0.38 & -0.23, respectively.

CAPACITY BUILDING OF FARMERS AND OTHER STAKEHOLDERS IN NATURAL FARMING

Anurag Verma[1*], Anjali Pandey[1], Somdutt Tripathi[2] and L. B. Singh[3]

[1]Research Scholar,[3]Professor and Head Department of Agricultural Extension Education, SVPUAT, Meerut, U.P.

[2]Research Scholar, Department of Agricultural Extension, BUAT Banda U.P

**Corresponding author: avermalmp2202@gmail.com*

The effective adoption and promotion of sustainable agricultural techniques depend heavily on the capacity building of farmers and other natural farming partners. The various facets of capacity building are examined in this abstract, with a focus on the importance of thorough training, information sharing, and communityinvolvement. Comprehensive trainingprograms covering the tenets, methods, and advantages of natural farming are the first step in developing capacity. Farmers, extension agents, and local communities should all be included in the creation of these initiatives. Training programs that are practical and hands- on enable learners to apply natural agricultural principles in an efficient manner. Stressing the interdependence of ecology processes, agroecological education is a crucial component of capacity building. Natural pest control, soil health, and biodiversity are critical concepts that farmers and other stakeholders must comprehend. The basis for regenerative and sustainable farming methods is this understanding. Building capacity requires making sure that pertinent information and resources are easily accessible. The most recent insights from research, industry best practices, and technical developments in natural farming should be available to farmers and other stakeholders. Their capacity to accept and use sustainable practices is improved by having access to high-quality seeds, organic inputs, and suitable technologies. Building capacity involves not just individual farmers but entire communities. Involving local population in the educational process promotes a shared knowledge of and dedication to natural agricultural methods. Events such as workshops, farmer field schools, and field demonstrations encourage community members to actively participate and share their knowledge. Training programs are more successful and scalable when technology is incorporated into capacity-building projects. Peer-to-peer learning, expert connections, and real-time information can all be facilitated by digital resources, internet platforms, and mobile applications for farmers.

ECONOMIC IMPACT OF EXTENSION SERVICES CUM TECHNOLOGICAL INTERVENTION ON DAIRY FARMER'S LIVELIHOOD

Rashmi Vishwakarma [1*], Ruchi Singh [2] and G. P. Lakhani[3]

[1] Post graduate student, [2]In-charge Head, Assistant professor, Dept. of Vet. & A.H. Extension Education

[3]Professor, Dept. of Livestock Production Management

NDVSU, Jabalpur, M.P. India

**Corresponding author: rashmivishwakarma22@gmail.com*

For maintaining the food security and poverty reduction all over the world, dairy farming plays an important role with employment generation for women and rural youth and helping to get regular source of income for rural community. Extension intervention helps the farmers to improve process efficiency as well as resource efficiency and finally their livelihood through changes in their behavioral aspects such as knowledge, attitude, adoption, etc. The cause to effect, ex-post-facto research design was used to study the impact of extension services cum intervention of technology in knowledge improvement, enhancement of adoption towards best dairy farming practices, increase quality and quantity of milk from dairy animals and improve dairy income and hence subsequent rural livelihood from dairy sector will be improved. Hence, six adopted villages of Jabalpur district considered as experimental villages while another 06 villages with same socioeconomic background selected as control to study the impact of extension services cum technological intervention on dairy farmer's livelihood. Pre structured interview schedule was integrated to collect data from all buffalo farmers of all selected village (n=130). To find out the test of significance between all parameters of livelihood, Mann Whitney U test was applied. Results of the study revealed that beneficiary farmers had significantly high level of knowledge, adoption, household milk production and monthly income from dairying. Therefore, proper and timely extension services cum intervention of technology on buffalo management practices are constructive and can improve the buffalo productivity which simultaneously improved the socio-economic status of buffalo owners.

NATURAL FARMING PRACTICES FOR SUSTAINABLE AGRICULTURE

Sanjana Shrivastava[*], Venkteshwar Jallaraph, Ravi Dubey and Harish M. N.

ICAR-ATARI, Zone-IX, Jabalpur, Madhya Pradesh

**Corresponding author : sanjanashri40@gmail.com*

As global concerns regarding environmental sustainability and food security intensify, there is a growing interest in adopting eco-friendly and regenerative agricultural practices. Natural farming emerges as a promising solution, emphasizing the use of indigenous knowledge, biodiversity, and holistic management techniques to cultivate crops without the reliance on synthetic inputs. The key components of Good Management Practices (GMPs) for natural farming, focusing on their role in enhancing soil health, promoting biodiversity, and ensuring sustainable agricultural productivity. The GMPs for natural farming encompass a range of practices, including maintaining soil health that emphasis on minimal soil disturbance to preserve microbial diversity and enhance nutrient

cycling, improve soil health, preservation of natural habitats on the farm to support beneficial insects, pollinators. Natural farming aligns with local climatic conditions and effective soil water utilization, encouragement of natural predators and beneficial insects to control pest population and promotion of farmer-to-farmer knowledge exchange to facilitate the spread of natural farming practices. Intercropping with crops from different families i.e., cereals, oilseeds, pulses and vegetables having different depths of effective root zone help derive the nutrition form different soil depths besides fixing atmospheric nitrogen by pulses and oilseed crops. There is potential for natural farming particularly in rainfed areas with reduced cost of cultivation and assured income to the farmers leading to economic viable sustainable agriculture.

NATURAL FARMING EMERGING NEED OF INDIAN FARMING

Krishna Kumar Rana [1*], K. P. Tiwari [2] and Vinita Singh[3]

JNKVV, Krishi Vigyan Kendra, Umaria, M.P., India

**Corresponding author: krishnayavi2016@gmail.com*

Agriculture is an important sector in India and is the basis of livelihood of more than 58 per cent of population, who are purely dependent on the agriculture and allied sectors. As per Department of Agriculture and Farmer Welfare, total food grain production in the country was recorded as 3296.87 lakh tonnes in 2022-23. In India more than 86 percent falls under the category of small and marginal farmers constituting less than one to two hectares of land and most of them are highly dependent on external chemical inputs such as fertilizers and pesticides, which have increased cost of cultivation and its continuous use has reduced soil fertility over time and serious problem in the health of human being. Thus, to counter the impact cuased by excessive use of chemical fertilizers Concept of Zero Budget Natural Farming (ZBNF) or commonly known as Natural Farming was developed by Padamshree awarded agriculturist Sh. Subhash Palekar in the mid 1990s assuming no purchase of any input from the market and using local available, home- made natural material like indigenous cow dung, cow urine, jaggery, pulses flour and soil from the bund of the farmer field. Natural Farming, traditionally known as a Rishi Krishi is emerging as an alternative option of Indian traditional farming and is a unique chemical-free traditional farming method that is considered to be agro- ecological based diversified farming system which integrates crops, trees and livestock, allowing functional biodiversity. According to Sh. Subhash Palekar, the Zero Budget Natural Farming has four essential components first is Jeevamritha that ensures soil fertility through cow urine, cow dung, undisturbed soil, pulses flour and jaggery. Second is Beejamritha that is use for seed treatment with cow dung, urine and lime based formulations. Third is Acchhadana (mulching) using poly-cropping and different mulches with trees, crop biomass to conserve soil moisture and adding organic carbon. Fourth is Whapsa that concern with water vapour condensation through activating available earthworms.

NATURAL FARMING PRACTICES IN CHHATTISGARH: ITS EFFECT ON FARMERS LIVELIHOOD AND SOCIO-ECONOMIC DEVELOPMENT

Jitendra Kumar Joshi*, Toshan Thakur and Hemlata Nirala

KrishiVigyan Kendra, Bemetara IGKV Chhattisgarh

**Corresponding author: jitigkv@gmail.com*

The intensive application of chemical fertilizer and effects of green revolution have encouraged the farmers to go with traditional cultivation practices as Natural farming. Natural Farming (NF) is one of the most potential crop cultivation methods to drastically cut down production costs by reducing dependence on market for purchase of critical inputs and also increases the demand of natural food habits. A study was conducted during kharif season of 2022 and 2023 to evaluate "Performance of traditional scented rice variety *(Jawaphool)* grown under Natural Farming system in Vertisol" at village-Kandai Block-Saja District-Bemetara Chhattisgarh. The treatments were conventional farming (T1) control without use of Natural farming components or biofertilizer only use recommended dose of Chemical Fertilizer and (T2) use of Natural farming components as minimum tillage + *Beejamrit* + *Jeevamrit* + *Brahmhastra* + biogas slurry + crop residue mulching, (T3) - T2 + butter milk culture. Results showed that with the adoption of *Beejamrit* for seed treatment and application of Jeevamrit along with Biogas slurry, Brahmastra for insect control and butter milk culture reduces the total cost of critical inputs and effects significantly to the total cultivation cost for traditional scented rice production compared to conventional agriculture practices (T1). During the two years, kharif grain yields in plots with chemical fertilizers were superior to those with natural farming by 30-38%. In general, there was no significant difference in the insect pests incidence between the systems during both the years. However, (T3) gave significantly higher net return (Rs. 63,232 /ha followed by (T2)– Rs.58,099/ha during both the Kharif season compared to Rs. 44,460/ ha found in conventional farming treatment (T1). Similarly, the Benefit cost ratio was found more in natural farming treatments (T3- 2.24) and (T2- 2.21) compared with conventional farming (T1-1.8) due to higher return pricing of natural farming products in the market showing better opportunities of natural agriculture in scented rice. The paper concludes that the implications of these different natural farming strategies and their rationales is a prerequisite for policy-makers to tailor policies and programmes aiming to assist rural society benefit from natural agriculture as a road map for advancing green growth & sustainable rural development. Thus, natural farming may not look as yield enhancing farming practices but definitely increases farmer's income through cost reduction and long-term sustainability.

THEME 3

Policy and Institutional Approaches for Upscaling Organic Farming

TOWARDS GOOD FOOD GOOD HEALTH: NATURAL FARMING AND GOVERNMENT POLICIES IN INDIA

Uma Rashmi

Teaching Associate, C.S.A.U.A.T., Kanpur

Corresponding author: umarashmiverma@gmail.com

We have many food items on our dining table, but have you ever thought about which are organic and healthy? Organic farming and organic food do wonder for your health; organic farming is beneficial to the soil, too, for it maximize soil fertility. In India, Organic farming is very economical i.e. no need for expensive fertilizers, Pesticides and high yielding variety seeds. There is high demand for organic produce locally as well as globally due to it being nutritious, tasty and good far health. Soil management is the primary method of organic cultivation in India. Agriculture is a significant contributor to India's economy, providing employment to over 50 percent to the population and contributing 18 percent of the country's gross domestic product. The National Government provides assistance to Indian farmer for promoting organic cultivation across the country through different government schemes. All the schemes stress on end to end support to Indian organic. i.e. from production to processing, certification and marketing to past harvest management support including processing which helps to bring down casts of organic products. Preserves soil fertility, improves animal welfare and effectively uses water system. To motivate farmers to adapt chemical free farming and enhance the reach of natural farming, the Government has formulated national mission on natural farming (NMNF) as a separate and Independent scheme from 2023-24 by the scaling the Bhartiya Prakritik Krishi Paddati (BPKP).

PERCEPTION OF TRIBAL FARMERS TOWARDS PRADHAN MANTRI VAN DHAN VIKAS YOJANA (PMVDVY) IN EAST GODAVARI DISTRICT OF ANDHRA PRADESH

Tummala Naga Satya Sai Srivani[1*], Parvez Rajan[2] and D. A. Padaliya[3]

[1&3]Ph.D Scholar College of Agriculture, JAU, Junagadh,

[2]Assistant Professor, College of Agriculture, JNKVV, Jabalpur

**Corresponding author: tnsssrivani@gmail.com*

Pradhan Mantri Van Dhan Vikas Yojana (PMVDVY) scheme was launched on 14thApril 2018 which is an initiative of Ministry of Tribal Affairs at central level and TRIFED as nodal agency at the national level. This scheme is one such effort of the government to improve the tribal livelihood and tribal income through value addition of various tribal products and to make them self-reliant especially the tribal women. The present study was conducted in East Godavari district of Andhra Pradesh state during 2021-22. The study was undertaken to assess the perception of beneficiaries towards PMVDVY, in which total 105 sample size was taken by using proportionate random sampling method from 8 villages under two mandals. The findings of the study revealed that, majority of the beneficiaries were of young age group and were female. The study also revealed that most of them were illiterate, had low annual income, small land holdings, medium level of utilization of source of information, medium economic motivation and medium level of market orientation. The perception of most of the beneficiaries towards PMVDVY was found favourable. PMVDVY helps the beneficiaries

especially women to improve their livelihoods, economic conditions, promote organic farming and thereby made them self-reliant.

STANDARDIZATION OF NATURAL FARMING PRACTICES FOR SOYABEAN BASED CROPPING SYSTEMS

Raghavendra Nargund*, B. U. Dupare, Rakesh Kumar Verma and K.H. Singh

ICAR-Indian Institute of Soybean Research, Indore, Madhya Pradesh

**Corresponding author: raghavendra4449@gmail.com*

Inflating chemical fertilizer prices, ecological threats, food and feed contamination due to high chemical intensive agricultural practices can be restrained through natural farming practices in different crops and cropping systems. Non-dependency on chemicals in natural farming system is a smart strategy for producing organic products that are perceived to be healthier, safer and contains no agrochemical residue. Soil fertility improvement, need for environmental resilience, conservation, and increased demand for healthier chemical residue free food in global market resulted in unprecedented interest in natural farming. Therefore, ICAR-IISR, Indore, has initiated experiment on natural farming in soybean based cropping systems during *kharif* 2023. The experiment was laid out in split plot design with five sustainable agriculture management practices (Natural farming, organic farming, integrated crop management, conservation agriculture and conventional agriculture practices) in main plot and three cropping systems (Soybean-chickpea, soybean-wheat and soybean-mustard) in subplot. Under natural farming employed a set of ecological approaches includes seed treatment with beejamritha, soil application of *ghanajeevamritha*, foliar application of jeevamritha, green manuring with Dhaincha in summer, mulching, need based hoeing and agniastra spray. The experiment is initial year and still we are standardizing natural farming practices for soybean and subsequent crops in sequence.

TRANSFER OF LEARNING THROUGH CAPACITY BUILDING PROGRAMS: A POLICY FRAMEWORK FOR ENHANCING EFFECTIVENESS

S. Gupta, M. A. Khan* and M. L. Sharma

Department of Agricultural Extension, IGKV, Raipur (CG)

**Corresponding author: hodagextn@gmail.com*

If we truly believe training makes a difference in organizational and individual performance, we must understand how to support the transfer of training in organizations. The present empirical study aims to find out the factors hindering and fostering the transfer of learning into work environment of working agriculture professionals. The survey was dispensed using survey monkey with 80 trainees of NAARM as respondent. Data were analyzed using descriptive statistics and partial least square structural equation modeling. Review of the previous empirical studies was conducted to identify and shortlist the factors influencing training transfer under 3 domains viz. Trainee characteristics, Training Design and Delivery, and Work Environment. These three domains make up the independent variables of the study, learning output domain was the mediator variable, while the transfer outcome was the dependent variable.

A conceptual framework was developed and hypotheses were empirically tested. Results depict that all the independent variables of the study were significantly positively correlated with learning output and transfer outcome except for motivation to learn with learning output. Results of SEM suggests that Learning output is found to be significantly predicted by cognitive ability, self-efficacy, Technological tools, training content relevance, training need analysis, Peer support after-training, and supervisor support after-training (SSAT). Statistically significant predictors of transfer outcome were motivation to learn, learning output, personal positive outcome, active learning, and feedback (with significant β value). Mediation analysis revealed that the variables like cognitive ability, self-efficacy, technological tools, training content relevance, training need analysis, PSAT and SSAT significantly predict transfer outcome through the mediation of learning output.

A Hierarchical Construct Model (HCM) was developed to reduce the complexity of the complete model and facilitate hypothesis testing. The HCM has the predictive relevance Q2 values for learning output and transfer outcome which suggests a very large predictive relevance of the model. The results of the empirical model showed that, while the 'Trainee characteristics domain' and 'training design and delivery' are very strong predictors of transfer outcome when mediated through learning output. 'Work environment domain' was found to be a significant predictor of learning output and transfer outcome, both directly and indirectly. The factors which are identified to have a positive and significant association with learning output need to be given much importance before and during training because learning is the necessity for transfer. Work environment variables were found to be the most important factors predicting learning as well as transfer and thus it is suggested that organization must strive to create a better organizational culture for training or capacity building programs to work.

STATUS OF INDIA IN GLOBAL ORGANIC PRODUCTION AND EXPORT

Ravi Kumar Dubey[1*], A.A. Raut[2], Prashant Namdeo[3], Sanjana Shrivastava[4] and Venkteshwar Jallaraph[5]

[1]Young Professional, [2]Scientist, [4]Young Professional, [5]Seniar Research Fellow, ICAR- ATARI, Jabalpur, JNKVV, Jabalpur

[3]Young Professional, Seed Technology Research Center, JNKVV, Jabalpur

**Corresponding author:ravidubey728@gmail.com*

The investigation was envisaged to examine the status of India in global organic production and to have an overview of the regional spread of India's organic production and export thereof. This investigation spanning the period 2012-13 to 2020-21, was based on secondary data extracted from various issues of the assessment reports of the programs/organizations overseeing the activities related to organic farming at the global and country level. The inspection highlighted that India's organic area increased over five-fold from 0.5 million ha in 2012 to 2.66 million ha by 2021 and accounted for 40.92 percent of the organic area in Asia and nearly 3.48 per cent of the global organic area. India's organic production had increased almost 2.46 times (3.2 million MT) by 2020-21 from 1.3 million MT in 2012-13. Nearly 90 per cent of organic production came from seven major organic states (Madhya Pradesh, Maharashtra, Karnataka, Rajasthan, Uttar Pradesh, Odisha, and Gujarat) in the country. The organic exports to the tune of 8.88 lakh MT from India translated into a realization of Rs. 7078 crore in the fiscal ending 2021, up from Rs. 1156 crores in 2012-13. Findings of the evaluation point towards the ample scope for propagating organic agriculture, given the large land

base in the country. The competitive strength of the states in producing organic crops highlighted by the study can well be exploited to make the most of the opportunities thrown open by the ever-increasing organic trade.

ROLE OF PUBLIC PRIVATE PARTNERSHIP IN ORGANIC AND NATURAL FARMING FOR MAINTAINING ECOLOGICAL BALANCE

Harideep Verma[1*], Madan Singh[2], Salam Prabex[3] and Vallabhaneni Srikanth[4]

[1,2,3] Division of Extension Education

[4] Livestock Production and Management Section

ICAR - Indian Veterinary Research Institute, Izatnagar, Bareilly, Up-243122

**Corresponding author:harideep0507@gmail.com*

India, being an agro-based economy with the second-highest farm output in the world, needs more sustainable growth in this area. The public-private partnership is one step towards attaining holistic growth. The government alone is not the answer to everything; the need is greater than the capital investment. This review is an effort to propose the possibilities of PPP in the field of organic and natural farming. The demand for promoting sustainable agriculture and maintaining ecological balance has increased enormously, while public sector funding for these services is not adequate as per the need. As a result, these support services have been suffering a lot. To meet this inadequacy, emphasis in recent years has been shifted over to decentralizing services, cost recovery, withdrawal of selected services and contractual services, and encouraging a public-private partnership model for organic and natural farming. The roles and responsibilities of organic and natural farming are continuing to expand, triggered by multiple global trends, including the increased demand for harmony with nature and the need to improve the food security of the country in the field of providing quality nutrition. Public-private partnerships (PPPs) offer a tangible and timely solution to address this complex environment and fulfill societal demands. This assessment also emphasizes the necessity of developing organic agriculture using public-private partnership (PPP) processes in order to address issues related to sustainable rural development.

CERTIFICATION OF ORGANIC PRODUCTS AND RELATED ISSUES

Subhendu Sekhar Sarang[1*]and Neeraj Upadhayay[2]

Department of Extension Education, JNKVV, Jabalpur (M.P.)

**Corresponding author: sarangisubhendusekhar1@gmail.com*

Organic agriculture has its roots in traditional agricultural practices encompassing countless villages and farming communities. It started as a response to growing awareness that the health of land is linked to the health and future of people. According to the USDA Organic Foods Production Act of 1990, organic production is the one that responds to site-specific management by integrating cultural, biological, and mechanical practices. There are various international and national standards for organic farming such as CODEX which produces set of guidelines for organic production. Europe

has its own set of guidelines for organic standards and Japan agricultural standard (JAS) which sets guidelines in Japan etc. The organic farming in India has been under the National Programme for Organic Production (NPOP) for accreditation and certification since october 2001. The operation structure of NPOP consists of Ministry of Commerce and Industry, the Ministry of Agriculture and Farmers Welfare, APEDA, Tea board, Coffee board etc. The certification is issued by testing centers accredited by the Agricultural and Processed Food Products Export Development Authority (APEDA) under NPOP of Government of India. An organic mark is given and valid for 3 years only. There are several schemes for promotion of organic farming such as PKVY, NFSM, National Mission on oilseed and oil palm, Mission Organic Value Chain Development for N-E region etc. A challenge being faced by various farmers in the country is the difficulty in certification of their organic produce due to various reasons such as lack of knowledge about the process, lack of accessibility to certifying agencies, high cost, complexity of process etc. The government needs to work on making the certification process easier, smoother, accessible and cost-effective for the farmers so that it does not become a barrier in the proliferation of organic farming in the country.

THEME 4

Government Initiatives and Policy Support in Promotion of Natural Farming

NATURAL FARMING: PRACTICES, CHALLENGES AND OPPORTUNITY

Kratika Nayak

Ph.D, Department of Agronomy , JNKVV, Jabalpur Madhya Pradesh , India

Corresponding author: nayakkratika9@gmail.com

Natural Farming is a chemical-free alias (alternate name) traditional farming method. It is considered as agro-ecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity. In India, Natural farming is promoted as Bharatiya Prakritik Krishi Paddhati Programme (BPKP) under centrally sponsored scheme Paramparagat Krishi Vikas Yojana (PKVY). BPKP is aimed at promoting traditional indigenous practices which reduces externally purchased inputs. The GoI has allocated budget of Rs. 325 crores for upscaling the various farming practices under PKVP. The BPKP programme has been adopted in State of Andhra Pradesh, Karnataka, Himachal Pradesh and Kerala. NITI Aayog along with Ministry of Agriculture & Farmers welfare roughly estimated that around 2.5 million farmers in India already practicing regenerative agriculture. In the next 5 years, it is expected to reach 20 lakh hectares- in any form of organic farming, including natural farming, of which 12 lakh hectares are under BPKP. India has made significant mark by promoting organic farming. India's rank in terms of World's Organic Agricultural land is 9th (1.94 million hectare area) and in terms of total number of producers was 1st (11.49 lakh farmers of producer), total export value is 757.49 million US $ as per 2020 data. Zero Budget Natural Farming (ZBNF) is a method of chemical-free agriculture drawn from the traditional Indian practices. The word zero budget means no credit and natural farming means growing crops without chemicals. ZBNF was originally promoted by Maharashtrian agriculturist and Padma Shri award recipient Subash Palekar who developed this model of farming in mid 90s as an alternative to green revolution which is driven by the agro-chemicals and intensive irrigation. He claims that these worms absorb toxic metals and poison groundwater and soil. Farming without chemicals is possible under this method. Under this method of farming plants consume only 10 percent of water that crops consume in conventional methods.

GOVERNMENT INITIATIVE AND POLICY SUPPORT IN PROMOTION OF NATURAL FARMING

Sunita Kushwaha* and Anushka Khare

Research Scholar, MGCGV Chitrakoot Satna (M.P.)

**Corresponding author: sunita444kushwaha@gmail.com*

Natural Farming is recognized as sustainable and eco-friendly farming to protect environment. It is the best farming practices or alternative conventional method to overcome the use of Synthetic fertilizers. This abstract examines the Government initiative and policy support in promotion of Natural farming. For global concerns Indian government has opte natural and organic farming practices in G20 summit. Natural farming is a traditional indigenous farming practice since ancient era. In modern context it is necessary to create awareness to re-adopt natural farming. "National Mission on Natural Farming" 2023, to scale up "Bhartiya Prakritik Krishi Paddati" (BPKP), main theme to conduct trainings with the help of KVKs, Agricultural Universities, NGOs, MANAGE, NCONF etc,

due to behavioral changes in between growers to shift from chemical based inputs to indigenous Cattle based raw produce and residue of crops, it also promotes traditional indigenous practices of crops cultivation in remote areas. Farmers have freedom to avoid externally purchased inputs around the year and they itself to produce biomass mulching to grow Sasbania, Dhecha, Lobia etc, to cover soil for protecting moisture conservation due to this also curtail weeds germination. To develop entrepreneurial skill of entrepreneur or growers get trained to establish startup efforts for develop manufacturing unit for preparation of *Jeewamrit, Beejamrit, Ghanjeewamrit, Dashparni* arka, (these products are prepared by raw produce of cow-dung, Urine formulation which is rich in nutrient content and good carrier for enhancing soil fertility) and biofertilizers.

ENTREPRENEURS CAN HELP PROMOTE SUSTAINABLE ORGANIC FARM PRODUCTION- SUCCESS STORY OF A VERMICOMPOST & MUSHROOM FARMER FROM PUNJAB

Vimla Saran[1*] and Y.S. Jadoun[2]

[1]Ph.D. Scholar, Division of Extension Education, ICAR- IVRI, Izatnagar

[2]Associate Professor, Department of Dairy Extension Education, SGIDT, BASU, Patna

**Corresponding author: vimla7966@gmail.com*

Mr. Lovedeep Singh, an entrepreneur in Pathankot district of Punjab state is having an engineering background. He started a vermi-composting farm named as "Orgo Yields" as a start-up on organic farming. He started the marketing of vermicompost and different organic produces from his family farm mainly mushroom, via advertising through different social media platforms like YouTube, Instagram, Facebook page etc. Initially there were lots of challenges in marketing because market place was flooded with vermicompost having very wide price range. Farmers usually go for low cost vermicompost compared to better quality vermicompost initially. It was challenging task to build the trust that "Orgo Yields" vermicompost was better for their crop production as well as soil health. He also started training program for students to empower them with the knowledge and skills required for vermicomposting as well as organic mushroom cultivation. He also creates awareness among farmers & students about challenges related to vermicompost production and organic mushroom farming based on his own experiences. Orgo-yields now serves as an inspiring example of how innovative organic waste management practice can contribute into ecological sustainability, community education and organic farming. Currently, there is big demand for bio-inputs like vermi-compost for growing number of organic farms all across the country. The entrepreneurs like Mr. Lovedeep Singh can be potential lead farmers to promote bio-input production and marketing. Such entrepreneurs can also assist extension services in spreading the innovative practices following farmer to farmer extension approach. Organic and natural farming need a lot of extension support to establish these farming practices with sustainability in centre stage since many still need to be convinced that farming can be done without agro-chemicals. The agricultural scientists including experts in the area of composting including vermi-manuring can help further fine-tune the practice used by Mr. Lovedeep Singh so that vermi-compost can be made more nutrient rich in terms of bioavailability of nutrients.

TRIBAL FARMER'S SUCCESS STORY: THE ORGANIC APPROACHES IN SCENTED RICE PRODUCTION

K. D. Mahant[1*], Manoj Kumar Sahu[1], Shivam Mishra[2] and B. S. Rajput[1]

[1]Krishi Vigyan Kendra, Raigarh, Indira Gandhi Krishi Vishwavidyalaya, Raipur (CG)

[2]ICAR - ATARI, Zone IX, JNKVV Campus, Adhartal, Jabalpur (MP)

**Correspondence author:kdm.indian777@gmail.com*

Jatiram Bhagat, a active farmer member of FPO from Rudupali village of Lailunga block of Raigarh district in Chhattisgarh state, India has been practicing organic farming since last 10 years. KVK Raigarh supported the technical knowledge which increases his interest on using organic farming practices, he restored the health of his soil and improved its fertility over the years and his farm has become a thriving ecosystem with increased biodiversity and improved water retention capacity. Vermicompost is excellent, nutrient-rich organic manure and used in their farming as well as adopted the organic approaches through cow based vermicomosting, vermiwash, bijamrit, jivamrit, organic bio pesticides and botanical pesticide for plant protection techniques, Hence the approaches of our rice product has enhanced aromatic quality, which has highly scented. Before the organic farming they were not getting good price of their products but at after the adaptation of organic practices increase the demand of product as well as price of milling rice 150/ per kg. Organic farming of scented rice: Jawafool variety has produced under the umbrella of " Kelo Jaivik Sugandhit Dhan Utpadak Samuh, Lailunga" (FPO) and collective organic farming along with organized marketing of their agri-products, so that it could benefits all the farmer members associated with FPO. Farmers produced of their local variety: Jawafool has wider adoptability in this particular locality, which produce almost 34 qtl per hectare under minimum practices. In this organic farming practices of their farm has become a thriving ecosystem with increased soil health, microbial population, biodiversity and increased water-retention capacity. Recent trends show that innovative farmers are shifting towards sustainable cropping system, which help restore the fertility of their soil health and positively affect the productivity of their crop.

EFFECT OF NATURAL FARMING ON YIELD PERFORMANCES AND SOIL HEALTH IN WHEAT CROP IN RAISEN DISTRICT OF VINDHYAN PLATEAU REGION IN MADHYA PRADESH

P K Dwivedi[1*], Swapnil Dubey[1], Mukul Kumar[1] and Anjali Dwivedi[2]

[1]Krishi Vigyan Kendra, Raisen (M.P.)

[2]CBSMSS, Jhinjhak, CSJMU, Kanpur (U.P.)

**Correspondence author:dwivedi_pradip@rediffmail.com*

The Green Revolution technology-induced agricultural intensification has transformed India from food scarcity to a food surplus country. However, this has also resulted into several adverse effects. Increased application of chemical fertilizers and pesticides with stagnating/declining crop productivity has dovetailed with uncertain market conditions and climate change effects, which has resulted in un-remunerative agriculture. Consequently, farmers have fallen into the debt trap due to the rising cost of crop production apart from health hazards due to serious exposure to harmful chemical pesticides. Natural farming, popularly known as zero budget natural farming,

is an innovative farming approach. It is low input based, climate resilient, and low cost farming system because all the inputs (insect repellents, fungicides, and pesticides) are made up of natural herbs and locally available inputs, thereby reducing the use of artificial fertilizers and industrial pesticides. Natural Farming an agro-ecological approach to farming is believed to be an effective way to counter some of these challenges. Krishi Vigyan Kendra, Raisen, conducted demonstrations on effect of natural farming on yield performances and soil health in wheat crop during rabi 2021-22 .The demonstrations were conducted involving 8 farmers of Gairatganj and Sanchi block of Raisen district. Altogether total 8 demonstrations were laid out over an area of 8 acre. Results revealed that ghanjeevamrit + jeevamrit was found to produce significantly highest available nitrogen in soil (290.2 kg/ha), highest available phosphorus (16.21 kg/ha), potassium (990.08 kg/ha), culturable microbial count bacterial (131.67x 10^5 cfu/g soil), actinomycetes (81.67x10^4 cfu/g soil), fungi (31.33x 10^3 cfu/g soil), and found highest seed yield wheat (3034 kg/ha). Ghanjeevamrit + jeevamrit treatment was found having greater influence over soil properties as compared to farmer's practice and it was significantly lowest in control treatments.

A STUDY ON EFFECT OF SEED YIELD AND ECONOMICS UNDER NATURAL FARMING VS CHEMICAL FARMING IN DIFFERENT CROPS

R. C. Sharma*, S. K. Ahirwar and Neel Kamal Pandre

JNKVV, Krishi Vigyan Kendra - II, Delakhari, Tamia, Chhindwara (MP)

**Correspondence author: sureshas.2007@rediffmail.com*

A field study was carried out at village *Kundali Khurd* of Parasia block, District -Chhindwara (MP) during year 2022-23 with a view to a study on effect of seed yield and economics under natural farming V/s chemical farming in different cropsas namely: Tomato (*Lycopersiconesculentum*), Chili (*Capsicum frutescens*), Maize (*Zea mays* L.), Soybean (*Glycine max*), Chickpea (*Cicer arietinum*L.) and Wheat (*Triticum aestivum* L.).The treatment combination as chemical farming(T_1) and application *Ghanjivamrit*1000 kg/ha as soil application + Seed treatment with *Beejamrit* @ 1 liter/ 20 kg seeds + *Jivamrit* @1500 liter /ha in three time of spray + One spray of *Neemastra* 500 liter/ha + *Agniastra* 20 liter@500literwater (two spray at 20-25 DAS interval) as (T_2). The site was located at 684mMSL with North latitude 22^0 4′ 58″ and South longitude 78^0 67′ 84″. The plant to plant spacing is 30, 30, 20, 30, 10 & 5 cm and row to row spacing is 60, 60, 45, 45, 30 & 22.5 cm. continuously in tomato, chili, maize, soybean, chickpea and wheat. The results indicated that the maximum number of plant population (5.55, 5.51, 1.11, 4.50, 3.34 and 8.90 plants/ha), plant height (105.50, 96.22, 195.11, 58.52, 45.16, 120.50 cm.) whereas, significantly higher in natural farming plots of tomato, chili, maize, soybean, chickpea and wheat sequence than chemical farming. The same demonstration field also resulted in the highest Stover yield (19.40, 16.04, 66.45, 36.96, 48.90 and 60.60 qt./ha), seed yield (751.20, 602.10, 55.31, 18.25, 15.14 & 43.50 qt/ha) was significantly recorded over chemical farming (35, 25, 31, 12, 9 and 30 q/ha) with net profit of Rs. 5.25, 7.10, 0.64, 0.65, 0.50, 0.61 lakh/ha and benefit cost ratio (3.33, 4.74, 3.83, 3.53, 3.00 and 3.44) was significantly recorded in natural farming field of tomato, chili, maize, soybean, chickpea and wheat sequence over chemical farming plots.

SUCCESS STORY OF G. SUJATHA- AN INNOVATIVE AGRI-ENTREPRENEUR

M.Usha*, M. Shiva, T. V. Reddy and N. V.V. S. Durga Prasad

Krishi Vigyan Kendra, Darsi

**Corresponding author: m.usha@angrau.ac.in*

Agriculture is the main economic structure for many developed and developing countries. The modern agricultural practices ultimately disturb the nutrient balance of the soil and therefore reduce soil fertility. Natural farming provides a natural way of crop cultivation by using environment friendly, animal and plant-based local organic resources that are highly enriched in nutrients required for crop plants. It enhances microbial activities and increases soil health. With the increase in population our compulsion would be not only to stabilize agricultural production but to increase it further in sustainable manner. The scientists have realized that the, Green Revolution with high input use has reached a plateau and is now sustained with diminishing return of falling dividends. Thus, a natural balance needs to be maintained at all cost for existence of life and prosperity. The obvious choice for achieving sustainability is natural farming.

G. Sujatha (59 years old), a graduate from Pedharikatla village of Konakanamitla block in prakasam district of Andhra Pradesh practising natural farming since 2015 and getting better results from natural farming. She owned 13 hectares land cultivating field crops in 6 Ha, horticultural crops in 5 Ha and agroforestry in 2 Ha. In field crops she is growing pulses, millets, spices (chilli, Turmeric), Oil seeds (groundnut, sesame) and in horticultural crops she is cultivating Pomogranate, Mango, Custard apple, Guava, Chiku, Amla, Lime. Initially she faced lot of problems like Low yields, high cost of cultivation, and low market price. With natural farming interventions like application of FYM, *Bijamrutam, Ghanajivamrutam, Jivamrutam, Agniasthram, Bramhasthram,* Fermented butter milk+Inagua, VepaKashayam in her farm she is getting a net income of Rs. 18,90,000 from field crops and Rs.7,50,000 from horticultural crops by marketing her entire produce labelled as organic products under a brand name of viswanatha farms and she became role model for rest of the farming community. Thus, natural farming has emerged as a game changer for agriculture in India and has disrupted the continuous intrusion of chemical fertilizers in agriculture effectively.

UTILIZATION PATTERN OF FUNDS RECEIVED IN PM-KISAN SCHEME - A STUDY IN HANUMANGARH DISTRICT OF RAJASTHAN

Ankit [1], Yagya Dev Mishra[2*] and Varsha Patel[3]

[1] Ex M.Sc. Student, [3]Ph. D. Scholar, Department of Ag. Extension Education, RVSKVV, Gwalior (M. P.)

[2] Scientist (Ag. Extension) Directorate of Extension Education, RVSKVV, Gwalior (M.P.)

**Corresponding author:ydmpantnagar@gmail.com*

The Government of India, on 24th February 2019 launched a nation wide scheme to provide monetary support to all the farmers of the country by the name of Pradhan Mantri Kisan Samman Nidhi (Prime Minister's Farmers' Tribute Fund) PM-KISAN. There is a provision of payment of Rs. 6000 per year to a farmer family in three instalments, subject to certain exclusions. The amount is being directly transfer in to the accounts of the beneficiaries. Under the Scheme, the entire financial

liability towards transfer of benefit to targeted beneficiaries will be borne by Government of India. Initially, the scheme was targeted to covers all marginal and small farmers (up to 2 hectare of land) and later on the scope of benefits through PM-KISAN have been extended to all the farmers. The coverage wise, scheme is one of the largest direct money transfer schemes in the globe. The present study was planned in Hanumangarh district of Rajasthan to know the utilization pattern of funds received in PM-KISAN scheme.

A sample of 140 beneficiaries of PM-KISAN scheme was selected randomly from seven villages spread over seven blocks of Hanumangarh district. A comprehensive face-to-face interview of the respondents was conducted for primary data collection using a semi-structured interview schedule. Utilization is a critical factor for any fund received by beneficiaries of any Government scheme because it is one the determining indicators for success of the scheme. The findings of the study conclude that highest number of respondents use this fund for buying seeds, fertilizers and pesticides followed by irrigation, field levelling and for the arrangement of feed & treatment of animal. Very less number of them mentioned about spending in for children's education and other family expenses like construction/repair of house.

NATURAL FARMER : A SUCCESS STORY

Jagadeesh Reddy

Corresponding author: jagred2006@gmail.com

This success story chronicles the agricultural journey of Jagadeesh Reddy, a dedicated farmer who embraced natural farming methods and achieved notable success. The narrative unfolds through the experiences, challenges, and triumphs of Mr. Reddy, providing insights into the transformative impact of natural farming on his agricultural practices and overall livelihood. The story begins by introducing Jagadeesh Reddy's background, his initial conventional farming methods, and the pivotal moment that led him to explore natural and sustainable alternatives. It details the gradual transition to natural farming techniques, including the adoption of indigenous microorganisms, crop diversification, and the integration of livestock for holistic farming. The narrative explores the challenges faced by Mr. Reddy during the transition, such as skepticism from peers and initial uncertainties about the viability of natural farming. However, it highlights his perseverance, continuous learning, and innovative approaches to address these challenges. Central to the success story are the tangible benefits experienced by Jagadeesh Reddy. These include improvements in soil health, increased crop resilience, and a significant reduction in dependency on external inputs. Enhanced environmental sustainability, coupled with economic gains, underscores the positive outcomes of his natural farming practices. The abstract concludes by emphasizing the broader significance of Jagadeesh Reddy's success story in inspiring and motivating other farmers to consider natural farming as a viable and rewarding alternative. The anecdotal evidence presented contributes to the growing narrative supporting the transformative potential of natural farming in sustainable agriculture.

THEME 5

Role of ICT and Social Media for Organic and Natural Farming Extension

EXPERT SYSTEM – A NEXT GENERATION TOOL FOR TECHNOLOGY TRANSFER

D. A. Padaliya[1*], N. B. Jadav[2] and Tummala Naga Satya Sai Srivani[3]

[1&3] Ph. D. (student), Dept. of Agricultural Extension, CoA, JAU, Junagadh

[2]Senior Scientist and Head, Krishi Vigyan Kendra, JAU, Pipalia

**Corresponding author: darshanapadaliya4257@gmail.com*

Agriculture is backbone of Indian economy and it is primary sector of country. Growers (Farmers) require advance or experts' knowledge to take decision during soil preparation, seed selection, fertilizer management, pesticide management, water scheduling, weed management etc, so that to get high yield. Expert system is now being used in agriculture sector. Expert system is most powerful approach that simulates human knowledge from an expert in certain domain for assist human to make decision at a level of or greater than human expert. Expert system helps growers in making economically viable and environmentally strong decision related to crop management. After considering success of expert system various expert systems were developed in agriculture. This paper explains need of expert system in agriculture and review of various expert systems in agriculture and assess the effect of using expert system on the performance and decision-making skill of the extension personnel. It is feasible to use an expert system as a decision support tool for transfer of agricultural technologies to the farming community.

KRISHI UPDATES: DIGITAL AGRICULTURE MODEL

Hitul Awasthi

National Network of Agriculture Journalists-MANAGE (NNAJ-MANAGE),
Hyderabad – 500030, Telangana

Corresponding author: hitulawasthi11@gmail.com

Adequate, timely and region specific information is an important input for sustainable and profitable agriculture. Krishi Updates is providing digital extension services to the farmers, facilitating communication and outreach activities and organising need-based trainings. Information sources are very vast, and farmers are unable to segregate the information that is most suitable for them. Krishi Updates aims to fill this void by providing region-specific and research backed information to the farmers. The present study revealed that majority of farmers were satisfied with the present model of information dissemination by Krishi Updates and found posting content on social media (Facebook, Youtube and LinkedIn), followed by sharing in Community of Practice (CoP) as a most effective and suitable method of information dissemination. Use of ICTs facilitates the effectiveness of conventional extension services, but cannot replace it completely. Digital Agriculture models like Krishi Updates can prove a great asset to provide ICT support to agriculture extension and marketing, promoting collective farming and in making such entities viable and sustainable. During the study, ninety percent (90%) of the farmers agreed to recommend Krishi updates to other fellow farmers, to bring a positive change in their communities.

DIGITAL AGRICULTURAL PRACTICES – A VISION FOR THE FUTURE OF FARMER'S EMPOWERMENT

Tummala Naga Satya Sai Srivani[1*], N. B. Jadav[2] and D. A. Padaliya[3]

[1&3]Ph.D Scholar and [2]Assistant Professor

[1,2&3]College of Agriculture, JAU, Junagadh,

**Corresponding author: tnsssrivani@gmail.com*

The Indian agricultural industry has long struggled with issues relating to input quality and supply, post-harvest storage, transport and processing, marketing, consumer value, environmental degradation, and weather-related risks. Furthermore, in an already turbulent trajectory, "Climate Change"is having an effect on the nature of farming operations and their overall outcome (decreasing water supply year after year; degrading arable lands; food insecurity; pest infestation; crop diseases; diminishing yield quality and quantity) and, the list of challenges appears never ending. Now the possible solution is digital agriculture. Digital agriculture is the use of digital technologies to improve the efficiency, productivity, and sustainability of agriculture especially in organic and natural farming. It encompasses a wide range of technologies, such as drones, sensors, robotics, artificial intelligence, and big data analytics. Digital agriculture has the potential to revolutionize agriculture and empower smallholder farmers, reducing challenges such as low yield and outcomes. By providing access to better, cheaper, or faster digital farming tools, the world can experience a transformation in agriculture. This technology can improve productivity, reduce costs, and improve livelihoods, leading to gains in poverty reduction, nutrition, education, and income. By working together, all farmers, including small holder farmers, can benefit from digital agriculture, ensuring a prosperous and sustainable future for farmers worldwide.

UTILIZATION PATTERN OF SOCIAL MEDIA BY ORANGE GROWERS

Preeti Datir[1*], V.S. Tekale[2] and N. R. Koshti[3]

[1]Ph.D. Scholar, Dr. PDKV, Akola, [2]Associate Dean, College of Agriculture, Mul, Dist- Chandrapur,

[3]Professor of Extension education, Dr. PDKV, Akola

**Corresponding author: preetidatir44@gmail.com*

The present study was conducted in Amravati and Nagpur districts of Vidarbha region in Maharashtra state where orange is grown on large scale. The ex-post-facto research design of social research was used for present investigation with 300 respondents, out of which, 150 respondents were considered as social media users and 150 social media non user orange growers were selected from 30 villages of six selected talukas of two districts by simple random sampling method. Utilization pattern of social media was measured on the basis of three parameters, frequency of use, extent of reach and perceived satisfaction. 53.33 per cent of the social media user orange growers utilized the whatsApp on daily basis. In case of You Tube, proportionately high per cent of social media user orange growers utilized the social media with the frequency of daily use (45.33%). 69.33% of the respondents had medium frequency to utilize the social media. The higher proportion of the social media user respondents received per day by message delivered in the form of text, audio and video and also messages received by orange growers were 37.33 per cent followed by per day message

utilized by orange growers (21.33%), 64.00 % of the respondents had medium extent of reach of social media, followed by 22.00 per cent of the respondents had high level of extent of reach of social media. 46.67 per cent of the social media user respondents were highly satisfied with services provided by social media are timely, followed by services provided by social media are highly useful (42.00%). 59.34 per cent of them had medium perceived satisfaction followed by 37.33 per cent respondents had perceived high level. 70.00% of the respondents had high index of utilization pattern of social media followed by 19.33 per cent had medium index of utilization pattern

USE OF SOCIAL MEDIA FOR AWARENESS AND PROMOTION OF ORGANIC AND NATURAL FARMING PRACTICES

Smita Singh[1*], R.K. Doharey[2] and N.R. Meena[3]

[1]Research Scholar, [2]Professor, [3]Assistant Professor at

A.N.D.U.A.&T. Kumarganj, Ayodhya

**Corresponding author: smitasingh006007@gmail.com*

Social media plays an increasingly important role in raising awareness and supporting sustainable agriculture practices in the digital age, especially in the area of organic and natural farming. This abstract examines how social media platforms are evolving and how they can be effective instruments for spreading knowledge, raising awareness, and creating a global community around environmentally friendly farming method. Social media sites, like Facebook, Instagram, Twitter, and YouTube, are easily accessible and participatory tools that aid in the broad distribution of knowledge on natural and organic farming practices. Stakeholders in agriculture, such as farmers, researchers, NGOs, and governments, use these platforms to disseminate success stories, best practices, and scientific discoveries, adding to a body of knowledge that is available to a wide range of users. Social media's visual format is used to highlight the virtues of organic farming and to tell engaging stories that appeal to a wide range of users. Interesting content, such infographics, films, and success stories, fosters a sense of community and shared responsibility while educating the public about the benefits of organic methods for the environment and human health. The use of social media as a tool for advocacy and awareness campaigns by influencers, agricultural specialists, and advocacy groups is further examined in the abstract. The dissemination of these messages is enhanced by cooperative projects and virtual gatherings, resulting in a cascade effect that cuts over regional and cultural divides. Still, issues including false information, digital gaps, and the requirement for efficient interaction tactics are recognized. The abstract's conclusion highlights social media's potential to revolutionize global knowledge and adoption of organic and natural agricultural practices, and it urges coordinated efforts to use these platforms to advance sustainable agriculture around the globe.

IMPORTANCE OF SOCIAL MEDIA FOR SPREADING AWARENESS AND PROMOTING ORGANIC AND NATURAL FARMING

Anushka Khare[1*], D. P. Rai[2] and Poorvi Rai[3]

[1]Ph.D. Scholar in Extension education and communication, [2]Dean and [3]PG scholar

MGCGV, Faculty of Agriculture, Chitrakoot M.P.

**Corresponding author:anushkak161@gmail.com*

This study explores the useful role of social media in raising awareness and promoting organic and natural farming practices. To provide knowledge and disseminating information through social media to the farmers and with others. In today's world with the increasing demand for healthier and sustainable food choices organic and natural farming has gained a very significant role. Social media platforms, such as whatsapp, instagram, youtube and twitter serve as powerful tools for transferring information and engaging a wide audience. There are various ways in which social media contributes to the dissemination of knowledge about organic and natural farming. Through the sharing of informative posts, engaging visuals and success stories, users can gain insights into the benefits of adopting sustainable agricultural practices. Share informative content about the benefits of organic and natural farming. Create posts, infographics, or short videos explaining the differences between conventional and organic farming methods. Highlight the positive impact of organic farming on soil health, biodiversity and overall environmental sustainability.

Use visually appealing content such as high-quality images and videos of organic farms, crops and farmers at work. Create before-and-after visuals to demonstrate the positive changes in soil quality and biodiversity over time. Organize Q&A sessions or live chats with experts in organic farming to address questions and concerns. Consistency is key. Regularly update your social media channels with fresh content. Use a content calendar to plan and schedule posts to maintain a steady flow of information. In, addition to awareness, social media plays a pivotal role in promoting organic products and farming techniques. Farmers and agricultural organizations utilize these platforms to showcase their products, share farming methodologies, and connect with potential consumers. This digital promotion not only expands market reach but also encourages consumers to make informed choices, supporting the growth of the organic and natural farming sector.

The study also investigates the challenges and opportunities associated with using social media for promoting sustainable farming practices. It emphasizes the need for strategic communication, collaboration and continuous engagement to maximize the positive impact of social media in creating awareness and driving the adoption of organic and natural farming practices.

TRANSFORMING LINKAGES WITH ICT & COMMUNITY BASED ORGANIZATIONS

Sanjeev Kumar[1*], Arpit Suryawanshi[2], Shailendra Kumar[3], Sati Shankar Singh[4] and Tanuj Misra[5]

[1, 2, 3]Teaching-cum-Research Associate, [4]Director Extension Education, RLBCAU, Jhansi, 284003

[5]Assistant Professor, Computer science, CoH, Durgapura, Jaipur-302018

**Corresponding author: sanjeevagri2000@gmail.com*

Transforming agriculture from sustenance to commercialized, focused and market oriented demands the scooping of other areas where the price realization, minimizing market risk and understanding the fine balance between demand and supply is necessary. Across the glove, technologies have been developed, remodeled and presented for increasing the production and income at farmer's level. ToT of ICAR has played its pivotal role in technology dissemination. Present technological transformation access and availability, demands focus from availability of technology to address commercial purposes where management, moderate risk taking ability, processing and marketing need to be aligned with the traditional farming, be it major crops or horticultural or medicinal & aromatic crops. (MAP). Market led extension is one such approach which emphasizes over factors affecting market supply and demand and their impact over production. Value addition to primary produces adds the value to the final products, shelf-life and consumer preferences & acceptance. Both forward and backward linkages play a vital role in determining the success of market based enterprise. Bundelkhand region has been marred with a number of constraints and at the same time presents ample opportunities for the success. There are many initiatives in the field of ICT which connect the technology with the consumer, information and relevant data. One such initiative includes the "Bundeli Krishi Vipnan" mobile application which provides an ICT based platform for the community based organization such as FPOs, SHGs, entrepreneurs and consumers. This application has been developed by the Rani Lakshmi Bai Central Agricultural University, Jhansi, through which stakeholders can showcase their products to the consumers sitting far from the primary producers. This also will be an enabling platform in terms of capability, empowerment and economic stability for primary producers, small, marginal farmers, entrepreneurs and agri-startups.

EMPOWERING AGRICULTURE THROUGH GIS: ENHANCING DECISION-MAKING, RESOURCE MANAGEMENT AND ORGANIC FARMING PRACTICES FOR SUSTAINABLE GROWTH

Rakesh Kumar Turkar[1*], R.N. Shrivastava[2], M.K. Awasthi[2] and A. Lodhi[4]

[1]Ph.D. Scholar, Soil and Water Engineering department, CAE, JNKVV, Jabalpur

[2,3]Professor, CAE, JNKVV, Jabalpur

[4]Assistant Professor, College of Agriculture, Balaghat, JNKVV, Jabalpur

**Corresponding author:rakeshturkar15@rediffmail.com*

Geospatial Information Systems (GIS) is a framework that enables the visualization and analysis of geographical and tabular data. The use of GIS in agriculture has been increasingly significant in global crop production, aiding farmers in boosting output, cutting costs, and efficiently managing their land resources. By utilizing data collected from remote sensors and sensors integrated directly

into farm machinery, farmers have enhanced their decision-making abilities for cultivating and maximizing yields. Agrarian mapping assumes a pivotal role in the supervision and control of soil quality and irrigation on any given farmland. GIS in agriculture and agricultural mapping serve as indispensable instruments for managing the agricultural sector by acquiring and implementing accurate information into a mapping environment. Remote sensing and GIS can play an important role in the identification of the suitable zones for the development of organic farming in more facile manner. GIS agriculture technology contributes to refining existing systems for acquiring and generating agricultural and resource data. The heightened efficiency and profitability resulting from the judicious application of technology have positioned precision agriculture as the most rapidly advancing sector within traditional agriculture.

ROLE OF ICT AND SOCIAL MEDIA FOR ORGANIC AND NATURAL FARMING

Shubham Kumar[1*], M. L. Sharma[2], Twinkle Handa[3] and Hem Prakash Verma[4]

1,3 & 4 PhD Scholar, Department of Agricultural Extension, College of Agriculture, IGKV, Raipur (CG)

&

[2]Professor and Head, Department of Agril. Extension, IGKV, Raipur (CG)

**Corresponding author: shubhamsinha032@gmail.com*

The integration of information and communication technologies (ICTs) and social media platforms has revolutionized the field of organic and natural farming extension. These tools have emerged as powerful instruments for education and outreach, offering a plethora of opportunities to promote and support sustainable farming practices among farmers worldwide. By facilitating the sharing of knowledge, providing real-time decision-making tools, fostering peer-to-peer learning, strengthening market linkages, and raising consumer awareness, ICTs and social media are playing a pivotal role in accelerating the adoption of organic and natural farming practices, paving the way for a healthier and more sustainable food future. The rapid advancement of information and communication technologies (ICTs) and social media platforms has revolutionized organic and natural farming extension, offering a transformative approach to knowledge dissemination, farmer empowerment, market linkages, and consumer engagement. ICTs, including mobile devices, internet connectivity, and online platforms, have facilitated internet connectivity, and online platforms, have facilitated the sharing of organic and natural farming knowledge and practices, overcame geographical barriers and reached a wider audience of farmers. Farmers can now access real-time weather data, crop monitoring tools, and market information through ICT-based applications and online platforms, enabling informed decision-making for effective organic and natural farming practices. Additionally, online forums, social media groups, and mobile applications have created virtual communities where farmers can connect, exchange experiences, and learn from each other's successes and challenges, fostering peer-to-peer learning and collaboration. ICTs have also strengthened market linkages and value chain development by enabling farmers to connect directly with consumers, retailers, and other stakeholders, promoting market access and fair price realization for organic and natural produce. Social media campaigns and online marketing strategies have effectively raised consumer awareness about the benefits of organic and natural farming, influencing purchasing decisions and driving demand for organic products. In conclusion, ICTs and social media play a pivotal role in organic and natural farming extension, offering a transformative approach to knowledge dissemination, farmer empowerment, market linkages, and consumer engagement, paving the way for a healthier and more sustainable food future.

EMPOWERING ORGANIC AND NATURAL FARMING THROUGH ICT AND SOCIAL MEDIA: A COMPREHENSIVE EXTENSION APPROACH

Sonam Agrawal[1*], Seema Naberia[1], Kamini Bisht[1] and Chandrika Sharma[2]

[1]Assistant. Prof., Deptt. of Extension Education, College of Agriculture, J.N.K.V.V. Jabalpur,

[2]Lab Technician, Deptt. of Extension Education, College of Agriculture, J.N.K.V.V. Jabalpur,

**Corresponding author: sonam.agri@gmail.com*

Organic and natural farming are becoming increasingly important in the global agricultural scene, which has seen a paradigm shift in recent years towards sustainable and ecologically friendly approaches. Effective extension services are required for this shift in order to promote adoption among farmers and spread knowledge. This abstract suggests investigating how social media and information and communication technology (ICT) might support the growth of organic and natural farming methods. The goal of the project is to find out how social media and ICT tools may improve the efficacy, accessibility, and reach of extension services for organic and natural farming. It is bridging the knowledge gap between specialists, researchers, and farmers. The abstract emphasises how focused information on organic agricultural methods, sustainable practices, and natural inputs may be delivered with great advantage by using ICT technologies, including web platforms, mobile applications, and virtual training modules. Further, it will investigate the ways in which social media platforms might function as dynamic conduits for the exchange of knowledge, the establishment of communities, and the instantaneous communication of farmers, extension agents, and agricultural specialists.

STUDY OF DOCUMENTATION BASED ORGANIC FARMING FOR SUSTAINABLE AGRICULTURE

Madhav Pandey[1*] and Aditya Shukla[2]

[1]University Librarian, IGKV, Raipur, Chhattisgarh

[2]Agronomist, JNKVV, Jabalpur, Madhya Pradesh

**Corresponding author: raipurpandey@gmail.com*

The present investigation has been carried out to study the pattern of documentation of various aspects of Organic Farming i.e. Sustainable Agriculture, Extension strategy, Community involvements, Institutional approaches, Government initiatives, Information, communication Technology and Social Media. The data available in Google Scholar, International Information System for Agricultural Science and Technology (AGRIS) and CABI for organic farming as follows 3840000, 14480, 161675; for organic farming with sustainable agriculture as 1630000, 1413, 17057; for extension strategy data as 530000, 400, 13450; Organic farming with Community involvement is 379000, 617, 17021; organic farming with institutional approaches as 455000, 807, 2348; organic farming with government initiatives as 376000, 382, 5191; data available for organic farming with ICT is 1070000, 10, 216; organic farming with Social Media is 661000, 16, 1062 respectively. It is obvious from above data that major emphasis of research and its documentation has been given to organic farming alone followed by organic farming with sustainable agriculture and extension

strategy aspects. Meager emphases were noted on ICT and social media aspects at global level. Since, it is the era of Information Technology (IT), therefore in order to boost the usage of organic farming, more emphasis should be given to ICT and social media by the users to make them aware and the quality food material can be made available to the people of the world.

IMPACT OF YOUTUBE IN DISSEMINATION OF ORGANIC FARMING TECHNOLOGY IN REWA DISTRICT

Kinjulck C Singh*, Chandrajiit Singh and Ajay Kumar Pandey

Krishi Vigyan Kendra Rewa, Madhya Pradesh

**Corresponding author: kinsingh19@gmail.com*

The integration of Information and Communication Technology (ICT) in agriculture has revolutionized information and knowledge sharing within the farming community. Present study explores the multifaceted impact of YouTube as a medium of ICT on agricultural practices, emphasizing its role in enhancing information dissemination, knowledge transfer, and overall productivity. Present study reveals that out of 500 only 24 per cent respondents own smart phones. Out of 120 smart phone owners, 71.67 per cent respondents spent medium time on Social Media (2-4 hrs per day). The average age of these respondents was found to be 32.3 years. Maximum respondents (81.67 per cent) reported that they trust what they saw on YouTube. Amongst all 35.00 per cent respondents have subscribed more than 4 YouTube channels on agriculture. The average watch time per video was found to be 114 seconds. Maximum respondents (61.66 per cent) perceived that organic farming is a tedious job. Majority (74.16 per cent) did not know the name of any eminent worker in the field of organic farming. The percent change in knowledge of respondents before and after watching YouTube video on targeted technology of organic farming was found to be high (60 per cent) followed by medium and low change of knowledge. Farmers' response to YouTube was found to be positive however, they did not differentiate between shady channels and trusted channels. Content development by government institutes and Krishi Vigyan Kendra may bring ease of access to information, coupled with tailored advisory services and will empower them to make informed decisions. This empowerment will not only have limited to management of organic farms but extends to sustainable practices, diversification strategies, and adherence to quality standards, aligning agricultural practices with contemporary market demands. integration of ICT in agriculture through YouTube not only transforms information and knowledge sharing but also has a profound impact on various aspects of organic farming, from decision-making and resource management to financial inclusion and sustainable practices. As technology continues to evolve, the synergy between agriculture and ICT holds the key to a more resilient, productive, and sustainable future for global food systems.

USE OF SOCIAL MEDIA FOR AWARENESS AND PROMOTION OF ORGANIC AND NATURAL FARMING PRACTICES

Anjali Pandey[1*], Somdutt Tripathi[2] and L.B.Singh[3]

[1,2] Research Scholar, [3] Professor and Head, Department of Agricultural ExtensionEducation,SVPUAT, Meerut,U.P

**Corresponding author : anjoopandey2612@gmail.com*

Social media has been an effective tool for raising awareness and supporting natural and organic farming methods. This abstract examines the various ways that social media may promote the use of sustainable farming practices, encourage community involvement, and spread information. Social media platforms are effective means of spreading knowledge about the tenets and advantages of natural and organic farming. Users are taught the benefits of adopting organic methods for their health, the environment, and their wallets through interesting content including info graphics, videos, and articles. Social media's viral nature makes it easier for information to quickly reach a wide range of users. Social media facilitates the development of online communities made up of farmers, natural and organic farmers' supporters, and customers. These forums offer a forum for farmers to exchange knowledge about difficulties, best practices and experiences. The organic farming movement is strengthened by the sense of community and common purpose that these communities share. Farmers, activists, and celebrities are among the social media influencers who have a significant impact on public opinion. Influencers have the ability to support and highlight the advantages of organic agricultural methods by utilizing their credibility and platform. Their support builds public confidence and inspires followers to think about implementing sustainable farming practices. Social media's instantaneous nature makes it possible to share information about events, market trends, and initiatives pertaining to organic farming in real time. In order to promote openness and accountability, farmers and organizations can update their audience about current projects, workshops, and market prospects. Social media enables the global advocacy of natural and organic farming practices by bridging geographic divides. Movements and campaigns can become well-known worldwide, giving sustainable agriculture a unified voice. The impact is increased by using hash tags, challenges, and viral campaigns to highlight the significance of ecologically friendly farming methods on a worldwide basis.

IMPACT ASSESSMENT OF KISAN MOBILE SANDESH (KMS) IN TRANSFER OF AGRICULTURAL INFORMATION IN DISTRICT LAKHIMPUR KHERI (UTTAR PRADESH)

Lalla Ram[1*], O. P. Yadav[2], Mani Prakash Shukla[3] and Dileep Vyas[4]

[1, 3 & 4] Ph.D. Research Scholar, [2]Assistance Professor,

Agricultural Extension Education, Chandra Sekhar Azad University of Agriculture and Technology, Kanpur

**Corresponding author :lallaram0412@gmail.com*

Kisan Mobile Sandesh which was started in the year 2008 with 74 members has presently 1000 members. About 127 million of farmers have limited access to information about modern agriculture techniques due to lack of access of extension worker support one extension worker looks after 1000 farmers. Mass media plays an important role in information distribution and in political market and

public policy making. The study was carried out in Lakhimpur Kheri district of Utter Pradesh. 12 villages from two blocks namely- Palia Kalan and Nighasan of the district were selected randomly. From the selected 12 villages, respondents from each village were selected randomly, thus total sample size for the present investigation consist of 117 respondents. It clearly indicated that majority of the KMS beneficiaries belonged to the young age group (58.12%) and were having education up to high school (46.15%). They had high perception (45.30%) level and were medium category. cosmopolite in nature (49.57%), Majority of them had higher economic motivation (43.59%), higher information seeking behavior (41.88%) and perceived message as appropriate (45.30%). study revealed that there has been a decrease in the percentage change of the beneficiaries belonging to the low knowledge level group (17%) followed by the medium (8%) and high knowledge level group (9%). it has been inferred that 9.00% of the Kisan Mobile Sandesh beneficiaries having high impact in terms Of their technical knowledge. The data also indicated that (25%) beneficiaries belonging to the low adoption whereas (14%) and (11%) beneficiaries belonging to the medium and high adoption level group. Result of study shows that messages was partially understandable, needful and timely, partially applicable and majority of respondents agree with the help of this service save time and money, increase in socialization, increase in knowledge, increase in productivity and the content was fully adoptable.

NURTURING CHANGE: INFLUENCE OF SOCIAL MEDIA IN THE RISE OF ORGANIC FARMING

Vertika Tomar

Department of Extension Education, JNKVV, Jabalpur (M.P)

*Corresponding author**:** vertika089@gmail.com*

In the past few years, there has been a noticeable shift in the agricultural landscape worldwide toward ecologically sensitive and sustainable farming practices, with a particular focus on natural and organic farming. A multitude of strategies has been recognized for the promotion and implementation of organic farming practices; nevertheless, social media has proven to be the most successful means of disseminating such strategies. A study was conducted in 2021-22 results of which revealed that 73.57% of the respondents used social media for information sharing 49.29% for socialization with relatives/contacts, and 47.86% for occupational networking. Social media is a powerful tool for promoting and raising awareness about organic farming all over the world. Organic farmers now have unprecedented opportunities to share their success stories, showcase their sustainable practices, and distribute informative content through social media platforms like Facebook, Instagram, Twitter, and YouTube. Social media is having a significant impact on the agriculture industry, going beyond viral trends and turning it into a platform for raising awareness and promoting changes in farming methods. From concise advocacy on Twitter to visually engaging storytelling on Instagram, there are various ways through which social media is revolutionizing the agriculture industry. Although social media is widely used, farmers face challenges in accessing technology and acquiring digital literacy. The recommendations to overcome these obstacles include government support, educational initiatives, and partnerships with technology and agricultural extension providers. In conclusion The connection between social media and sustainable agriculture is dynamic. It provides stakeholders with a roadmap for utilizing digital platforms to promote natural and organic farming. As global concerns about environmental sustainability and food security increase, leveraging social media becomes a critical strategy for raising public awareness and participation in the move towards more resilient and eco-friendly farming practices.

THEME 6

Community Involvement and Group Approaches

FARMER'S INDIGENOUS KNOWLEDGE AND ITS ROLE IN ORGANIC AND NATURAL FARMING

Neha Kushwaha[1*], Prashant Shriwastava[2] and Anjali Sharma[3]

[1&3] Ph.D Scholar, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.)

[2]Assitt. Registrar & Assitt. Prof. agril. Ext., JNKVV, Jabalpur (M.P.)

**Corresponding Author: singhneha3103@gmail.com*

The world has seen an increase in interest in sustainable agricultural practises in recent years, with a particular emphasis on organic and natural farming methods. Organic and natural farming approaches prioritise ecological balance by avoiding synthetic inputs and promoting regeneration practises. These methods are similar to indigenous ways in that they emphasise the balance of agriculture and nature. This revival is more than just a return to ancient farming techniques; it is an acknowledgment of the wisdom hidden in indigenous knowledge systems that have supported communities for generations. Indigenous knowledge is the wisdom gained over the years by local groups and their interactions with the environment. This knowledge includes a thorough understanding of soil, weather trends, plant and animal behaviour, and resource management in the course of time. Indigenous knowledge, as passed down through oral traditions and practical experience, is critical in building community resilience in the face of environmental and socioeconomic difficulties. It promotes adaptation to local conditions and dynamic changes. This helps communities to adjust effectively to changing climates, emerging pests, and resource limits, resulting in more sustainable and resilient farming systems. There are problems to incorporating indigenous knowledge into organic and natural farming, such as knowledge loss and erosion. Acknowledging the importance of this knowledge, on the other hand, opens up possibilities for collaboration, empowering indigenous people, and developing plans for a more sustainable agricultural future.This abstract highlights the potential benefits of bridging the gap between traditional wisdom and modern agricultural practices, emphasizing the importance of cultural preservation and ecological sustainability.It also provides an overview of the interaction between indigenous knowledge systems and the promotion of community resilience in the context of organic and natural farming.It analyses how indigenous knowledge is used to adapt and innovate farming practises, producing sustainable and resilient agricultural systems.

COMMUNITY SEED BANKS AND CONSERVATION OF TRADITIONAL CROP VARIETIES

Varsha More[1*], Parvez Rajan[2], Prashant Shrivastav[3] and Neha Kushwaha[4]

Dept. of Extension Education, COA, JNKVV, Jabalpur

**Corresponding author: varshamore23008@gmail.com*

Community seed banks in India are grassroots initiatives that aim to conserve traditional and indigenous crop varieties and promote agricultural biodiversity at the local level. These community-based seed banks play a crucial role in preserving crop diversity, ensuring food security, and sustaining traditional farming practices. Seeds are obtained from the farmers in the community and are selected and stored depending on the agreed storage system. Community seed banks can take different forms, for example, seeds can be stored in pots in a shed or community buildings, or in clay pots on the floor, in a family granary or on the kitchen shelf. Once the seeds are collected from the

farmers, they are stored in a community seed bank until they are needed. One of the purposes of a community seed bank is to serve as an emergency seed supply when farmers experience a shortage of seeds, due to failure or destruction of crops as a result of floods, droughts, pests and diseases. seed banks acts as farmers' savings for future planting. They therefore serve as a buffer against environmental and economic losses. Community seed banks are crucial for ensuring seed and thus food security, without seeds, farmers are not able to grow crops. Community seed banks will help to preserve seed of the most adapted varieties for the region, either local varieties or new ones coming from breeding programs. The selection of the most suited varieties for a region needs time and trials with technical support, but after the identification of best varieties, the community seed bank plays a very important role in maintaining the availability of quality seed. The conservation of traditional crop varieties and landraces contributes to food security by safeguarding genetic diversity, supporting local adaptation, enhancing nutrition, preserving culture, reducing dependence on modern varieties, empowering farmers, and increasing resilience to global challenges. Importance of conservation of traditional crop varieties: - farmers can preserve genetic diversity and reduce the risk of crop failures due to disease or pests. This can also help maintain the resilience of ecosystems and promote overall ecosystem. By conserving traditional seed crops diversity, the efforts gap between restoring biodiversity and improving agricultural productivity can be bridged. The conservation methods can restore biodiversity loss while peasants and farmers empowerment can be implemented, which can support the efforts of eradicating poverty and hunger. By improving conservation management and assistance to increase farmers access and rights to get and plant the seeds can save local knowledge, increase community resilience and insure agriculture productivity. Conservation of traditional crop varieties can be achieved through various means: Seed Banks, On-Farm Conservation, Community Seed Banks, Research and Documentation, Policy and Advocacy, Market Access.

EFFECTS OF TURMERIC POWDER ALONG WITH PROXIMATE NUTRIENTS OF BROILER CHICKS

Ankur Dwivedi

Research scholar, Animal Husbandry & Dairy Science (LPM)

Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalay Chitrkoot Satna Madhya Pradesh

Corresponding author: ad463738@gmail.com

The experiment was conducted at the livestock production and management unit, MGCGV, Chitrakoot Satna (M.P.) Freshly hatched, apparently healthy, day old straight run 225 commercial broiler chicks (Cobb strain) were procured on 18th April 2022 from Government Poultry farm. for the present study. Routine, day old vaccination for (F_1 strain) disease were given to the chicks just after hatching. On 14th day all the Chicks were wing banded. Individually weighed and randomly divided into 4 treatment groups excluding one that of control. Each group having 45 broiler chicks, was further sub -divided into replication of 15 chicks. Based on results it concluded that turmeric powder has None Significant effect on the body weights feed intake, gain in weight and feed efficiency of broilers. Based on feed efficiency best performance of broilers was observed in supplemented with 0.1 per cent turmeric powder, followed by 0.0.1 per cent turmeric powder. All treatments were economically better than control. Based on results it concluded that turmeric powder has no significant effect on the body weights feed intake, gain in weight and feed efficiency of broilers. Based on feed efficiency best performance of broilers was observed in supplemented with 2.5 per cent turmeric powder, followed by 1.5 per cent, 0.5 percent 3.5 percent and turmeric powder.

SWOT ANALYSIS OF DIVASA AGRO FARMER PRODUCER COMPANY, DEWAS DISTRICT OF MADHYA PRADESH

P. Shrivastava[1*], Anupama Verma[2] and Pankaj Patidar[3]

1. Assistant Registrar and Assistant Professor, Department of Agricultural Extension, JNKVV, Jabalpur, M.P.

2. Assistant Professor, Department of English, Institute of Agri-Business Management, JNKVV, Jabalpur, M.P.

3. Former P.G. Scholar, Institute of Agri-Business Management, JNKVV, Jabalpur, M.P.

**Correspondence author: prasantdgg@gmail.com*

The concept of Farmer Producer Companies which is in its nascent stage must be nurtured by institutional support so that the small and marginal farmers could harvest the benefits of empowerment, livelihood, and raising the standard of living. FPCs are viewed as an important risk mitigation tool to overcome the obstacles faced by the farmers, especially small producers seeking benefit from growing market opportunities in developing nations. A committee was set up by the Government of India led by Mr YK Alagh had proposed Farmer Producer Companies (FPCs) as an alternative to co-operative societies. The Companies Act was suitably amended to enable the registration of the FPCs. In the year 2020, there were 237 FPCs registered in Madhya Pradesh out of which the Divasa Agro Famer Producer Company Ltd was registered on 2nd August 2019 under the Companies Act, 2013.The present study was carried out in the Dewas district of Madhya Pradesh during the year 2020-21. A multi-stage, purposive and random sampling technique was used for data collection. 18 villagers/farmers were randomly selected from each of the 10 villages which were purposively selected for the study. Thus, the sample size was 180 farmers who were members/ shareholders of the Divasa Agro FPC. Primary data were collected from the farmers with the help of a structured interview schedule. SWOT analysis is used to help focus activities on areas of strength and where the greatest opportunities lie. It is used to identify the dangers that take the form of weaknesses and both internal and external threats. It was found that the main strengths of the company were thelarge number of member farmers, wasprovided good quality seeds to its customers. While, the main weaknesses were – it did not have good infrastructure facility and it did not have its own cleaning, grading and packaging machines. The main opportunities were - the government policies encouraging FPCs & supporting them and government makes liberal policies & tax relaxation for FPCs. The main threats were - uncertainty about the support for the proposals related to FPC establishment & management and large fluctuations in the prices of the produce in the market.

PARTICIPATION OF WOMEN IN ORGANIC FARMING

Siddharth Rajput [1*] and Abhilash Dangi[2]

Department of Extension Education, JNKVV, Jabalpur (M.P.)

**Corresponding author: siddharthrajput1231@gmail.com*

Women play a decisive role in farming and preserving local agro-biodiversity because it is largely a household enterprise. Women are engaged at all levels of the agricultural value chain; i.e., production, pre-harvest, post-harvest processing, packaging, and marketing to increase productivity in agriculture. As per the Annual Periodic Labour Force Survey (PLFS) Report 2022-23, agriculture had

the highest estimated percentage distribution of female workers, i.e. 64.3%. As per the information collected in Agriculture Census 2015-16, about 11.72% of the total operated area in the country was operated by female operational holders. Therefore, it becomes highly important and necessary to include women in organic farming practices and activities also to ensure the success of organic farming in India. Women play a significant role in organic farming development like crop cultivation, livestock, agroforestry, post-harvest operations, fisheries, etc. through integrated management and use of diverse natural resources. This study reviews the various challenges, issues, and opportunities for women to improve their socio-economic status and increase participation through organic farming. It also analyses various government initiatives like Deen Dayal Antyodaya Yojana-National Rural Livelihood Mission's organic farming approach through women SHGs, DAY-NRLM's Krishi Sakhi training program for natural farming, promotion of organic farming under PM DevINE scheme, etc. being run for inclusion of women in organic and natural farming. In the end, the study concludes and analyses how organic farming is making a positive impact on the lives of women and their families along with improving their standard of living, providing food security, and opening new sources of diversified income.

AGRICULTURE REFORMS THROUGH GENDER EQUALITY IN ORGANIC FARMING

Shikha Shrivas[1*], Ritika Keshari [2] and P. Shrivastava[3]

[1&2] P G Scholar, [3]Assistant Registrar and Assistant Professor,

Department of Agricultural Extension, JNKVV, Jabalpur, M.P, India

**Corresponding author:shikhashrivas6600@gmail.com*

In developing countries including India, agriculture plays a critical role in reducing rural poverty, enhancing food security, narrowing income disparities as well as for delivering environmental services. Fostering organic agriculture, in particular is seen to have considerable potential to improve the livelihood of smallholder farmers and lead to sustainable development. To realize this potential, women play a fundamental role as they are important adopters in organic farming. The long-standing difficulties faced by rural women in terms of inadequate access to productive resources (Inputs, Credit, Transport, Land, Extension Services, Technical Assistance, and Storage) stop them from adopting new technologies or encouraging them for economies of scale. Organic agriculture is also known to build upon the comparative advantage of the disadvantaged poor farmers and smallholders. Marginal farmers who practice low-input traditional agriculture are mostly located in remote areas that are relatively pristine with minimal or no chemical inputs, making them suitable for quality organic production specifically demanded in lucrative urban markets and markets of developed countries. More importantly, organic agriculture creates opportunities for women. Organic farming is one of the widely used methods, which is thought of as the best alternative to avoid the ill effects of chemical farming.

Organic agricultural methods are internationally synchronized and legally enforced by many nations, based in large part on the standards set by the International Federation of Organic Agriculture Movements (IFOAM). Organic agriculture can be defined as "an integrated farming scheme that strives for sustainability, the improvement of soil fertility and biological diversity." Traditionally, men have been more likely to manage cash crops, while women have more typically farmed subsistence crops for home consumption, including "kitchen gardens" of fruits, legumes and vegetables. Men are also commonly responsible for chores such as land clearing, ploughing and

harvesting, while women often work in seed selection and management, weeding, planting and postharvest processing. In many contexts, men have greater access to animals and mechanization for ploughing and clearing of land, while women's agricultural work tends to be more manual and labour-intensive. The poor, especially women, face obstacles in making their voices heard even in democratic systems and in increasing accountability and governance reforms in many areas. For instance, recent studies stress that women's representation and gender integration into national plans and agricultural sector strategies remain a challenge. Gender issues must be addressed in development. First, gender dimension is crucial for economic reasons and from the efficiency point of view. This is especially true in the agriculture sector, where gender inequalities in access to and control over resources are persistent, undermining a sustainable and inclusive development of the sector.

FROM FIELDS TO MARKETS: TRIBAL WOMEN DRIVING MILLET-BASED NATURAL FARMING IN MADHYA PRADESH

Kamini Bisht[1*] Seema Naberia[1] Manisha Shyam[2] and Gaurav Wani[1]

[1] Assistant Professor, JNKVV Jabalpur

[2] Scientist, RARS, Dindori, JNKVV Jabalpur

**Corresponding author: bishtkamini@gmail.com*

Tribal communities in Madhya Pradesh with their rich agricultural heritage have a unique connection to millets. Within these tribal areas, women emerge as the primary custodians of traditional knowledge associated with indigenous farming practices. In the tribal context, women are crucial for seed conservation, safeguarding the diverse genetic resources of millets. The traditional varieties of millets, such as Kodo and Kutki have been integral to the staple diets of these communities. Women as the keepers of these seeds not only contribute to maintaining biodiversity but also play a pivotal role in ensuring the resilience of crops in the face of changing environmental conditions. Their active involvement in natural farming initiatives becomes paramount in preserving and passing down these age-old techniques. The hands-on farming practices inherent in natural farming find a strong ally in the active participation of tribal women. They contribute significantly to the success of natural farming initiatives from sowing seeds to implementing natural farming methods for crop and pest management. Their knowledge of local ecosystems and sustainable agricultural practices is invaluable in achieving a harmonious balance between cultivation and environmental conservation. In essence, the key role of women in promoting natural farming in millets in tribal areas of Madhya Pradesh extends beyond production. Community-based organizations and self-help groups in Dindori, Mandla, Umaria and Shadhol districts are promoting processing, value addition and marketing of millets. SHGs play a crucial role in primary cleaning, grading, and color sorting, allowing farmers to benefit from the value-added prices. Community-based organizations and SHG Federations through processing and marketing are reducing middle men between the farmers and consumers to achieve a better price through bulk sale. These platforms can become avenues for the dissemination of natural farming in millets. Through collective learning and shared experiences, women empower one another to adopt and adapt sustainable farming practices, creating a resilient farming community.

ENABLING COMMUNITY INVOLVEMENT FOR STEWARDING COMMUNITY RESOURCES OF AGRO ECOSYSTEM FOR ORGANIC FARMING

Neha Kumari

Ph.D. Scholar, Department of Extension Education, Bihar Agricultural University, Sabour, Bihar

Corresponding author:nehakumaricoll97@gmail.com

Organic farming essentially calls for community involvement for stewarding of common natural resources of soil, water, flora and fauna of agro ecosystem. Good practices of organic farming demand community participation. It is not possible if one or two farmers practice organic farming, but successful only when all the farmers in the village agro ecosystem practice all good practices as a whole. Hence mobilizing farmers for group actions is an imperative for organic and natural farming. So, all extension strategies need to adopt a group mobilization approach and organise group actions to remove chemical fertilizers and pesticides from their fields; and to adopt organic farm manures, green manures, green leaf manures for enriching soil fertility; and to allow for natural process and natural cycles operate in Nature including control of crop pests by natural enemies; and to help restore soil microbial flora and fauna including earthworms and other soil burrowing insects to enable good soil aeration and soil moisture retention and humus development in soil. Such a land husbandry of Nature builds a sense of community ownership among the farming communities for donning stewardship roles of sustainable natural resource management, essential for organic farming. Extension strategies for promoting organic and natural farming need to consider the involvement of whole community to sustain and manage the agroecosystem of the villagers. The innovations and good practices of organic farming are so designed that they would be most effective only when the whole community is mobilized to adopt them together. One of the best field examples of community involvement are: Community Managed Sustainable Agriculture (CMSA) model (by NGO, Centre for Sustainable Agriculture -CSA Tarnaka, Hyderabad, Tekangana) of diffusing organic farming practices by self-help groups of women and men in Andhra Pradesh, Telangana and Maharashtra leading to farmers owned '*Sahaja Aharam*' PO federation of organic farm products.

VALUE CHAIN MODEL OF CUSTARD APPLE PULP IN CHHINDWARA DISTRICT OF MADHYA PRADESH: AN INNOVATIVE APPROACH BY SHG

D. C. Shrivastava*, R. K. Jhade and Chanchal Bhargava

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Krishi Vigyan Kendra, Chhindwara (M.P)

**Corresponding author:dcshrivastava@jnkvv.org*

Custard apple (*Annona squamosa* L.) is one of the delicious fruit use as table purpose due to its pleasant flavour, mild aroma and growing gregariously and widly in hilly tracts, waste land in several part of India. Custard apple is also a source of the medicinal and processed value added viz. jam, pulp, ice cream etc. There is a need to developed Institutional (Organized) Marketing System for supply of custard apple and utilize the nutritional potential of custard apple. Present investigation was conducted in *Teminikhurd* village of Chhindwara District. Initially farmers engaged in custard apple collection individually and facing problem in marketing Initially farmers engage in custard apple collection individually and facing problem in marketing and discussed with KVK, after training developed Institutional (Organized) Marketing System for supply of custard apple in Local Market of Chhindwara district. After a period of time when the volume of their savings grew, these groups were registered with Societies as Coffee ProducerCompany. The women self-help group of Coffee-Producer-Company were trained in processing of custard apple and hygiene quality parameter under the guidance of *Krishi Vigyan Kendra* Scientists. Custard apple fruits were collected by 350 SHG members from the surrounding forest area nearby the *Mokhed* block and fruits were stored in processing center at room temperature for ripening. The trained SHG members recovered the 12 tones fruit pulp in 62 days from 16 tones custard apple fruits with the help of pulper. The production cost of one kg pulp was Rs.55. For improving self-life, the pulp was stored in cold storage at -16 ^{0}C temperature. The chilled pulp is being marketed of Rs.170/kg. At this price the benefit cost ratio of the product is 3.09. Due to Development of Institutional (Organised) Marketing System farmers can easily sale the custard apple pulp in market. The farmers also get better returns and employment, making their living standards better. The society is regularly investing the share of profit for generating the facilities of logistics support for further improvement in the efficiency of model. The model can be replicated throughout the country and the marketing efficiency can be improved to a greater extent.

INDIGENOUS AGRICULTURE KNOWLEDGE OF TRIBAL FARMERS IN MADHYA PRADESH FOR LAND RESOURCE MANAGEMENT AND SUSTAINABLE FOOD SYSTEM

Shinogi K.C.*, Sanjay Srivastava, Sanjay Kumar Parihar and Yashwant Gehlot

ICAR-Indian Institute of Soil Science, Bhopal, Madhya Pradesh

**Corresponding author: shinojikallely@gmail.com*

Indigenous knowledge system in agriculture developed by ancient farmers integrating their years of observations and understanding on agriculture and agro-ecosystem management was almost a neglected human-based resource until the climate change put serious challenges on the agriculture and food production system. In recent years, these time-tested technologies have been increasingly being discussed as a tool to rebuild the long lost resilience of agro-ecosystems. The study

conducted to document the community-based indigenous soil and water conservation practices in the tribal farmlands of Balaghat district in Madhya Pradesh identified the tribal farming system of the area as rainfed and organic-by-default rice-fallow system. Land management practices such as terracing of undulated land for farming, fragmentation of fields into small units with the help of grassy field bunds having water inflow-outflow system, water harvesting ponds in the lower hill slopes and deep summer ploughing were found to have great role in recharging water resources of the locality. However, analysis of soil samples showed practices like manuring farm fields using farmyard manure, wood ash and pond mud along with cattle grazing in fallow period are inadequate to keep the soil fertile enough to generate higher yields from the non-traditional rice varieties. The average status of available plant nutrients in the soils were 0.9 percent organic carbon, 206 $kgha^{-1}$ nitrogen, 20 $kgha^{-1}$ phosphorus, 223 $kgha^{-1}$ potassium, 0.4 $mgkg^{-1}$ sulphur, 1.4 $mgkg^{-1}$ zinc, 0.07 $mgkg^{-1}$ boron, 143.2 $mgkg^{-1}$ iron, 124.6 $mgkg^{-1}$manganese and 5.3 $mgkg^{-1}$ copper. Whereas, the average yield from the rice crop is in the range of 2.5-3.5 tha^{-1} from rice varieties that could generate 4.0-4.5 tha^{-1} under good management. Still, the unique technique of growing rhizomes, roots and tuber crops on raised earthen beds mulched with rice straw and fresh cow dung slurry application observed to have enormous importance in ensuring the nutritional security of these isolated population. It can be therefore inferred that in order to ensure a sustainable livelihood to the custodians of indigenous agricultural knowledge in the present condition integration of other complementary technologies are inevitable in such a way that they contribute more to the agricultural production system with least environmental consequences.

ITK LED SAFE FOOD PRODUCTION FOR NEX GEN RURAL AND URBAN GROWERS

R. Vasantha*

Professor, Extension Education Institute, PJTSAU, Hyderabad

**Corresponding author: vasanthasakkhari@yahoo.co.in*

Indigenous Farmers' traditional knowledge includes the collective knowledge and abilities that have been honed over ages and passed down from generation to generation through critical observation and on farm refinements done by some of the curious and inquisitive farmers. This eco-friendly, location-specific knowledge that produces safe food is largely ignored and dismissed as antiquated and superstitious. The value of Indian farmers' traditional rich expertise was once again highlighted by the natural farming movement, which was fuelled by the government of India's tireless attempts to produce safe food and a resilient ecosystem through a number of support schemes and initiatives.

Farmers have accumulated a wealth of knowledge regarding the nutritional worth and therapeutic effects of various plants. Chemical-free, nutrient-dense foods like small millets, pulses, oilseeds, indigenous fruits and vegetables and many other underutilised food plants are still important components of the diets of some tribal people today. These foods produced from safe cultivation practices, boost their resistance to diseases and lower the risk of developing vitamin deficiencies as well as a number of lifestyle diseases like diabetes, obesity and cancer.

The study provides information on ITKs based on direct interviews, documented case studies, successful instances and literature evaluations. Farmers, government officials and non-government officials made up the sample. While farmers in Telangana, Andhra Pradesh, Kerala and Extension specialists from the NGO sector in Telangana and Andhra Pradesh provided information on traditional

methods, middle-level South Indian Extension Professionals from state government departments put forth strategies for scaling up of ITKs.

This paper compiles and presents ITKs that farmers considered highly effective but were highly neglected or disregarded viz methods of weather forecasting, seed treatment, land preparation, plant protection, manures, water harvesting, winnowing, storage, etc and some of the important natural methods adopted by dairy farmers in South India for more milk production and disease management in cattle. This article goes into further detail on the natural techniques used by urban farmers to harvest their own produce.

The most recommended course of action suggested by cutting edge level state government extension professionals is to raise farmers' awareness of ITK-centered Integrated Farming Systems in order to facilitate the expansion of natural farming.

To ensure that Nex Gen is fed safe food, it is imperative that traditional farming practices used by indigenous farmers throughout India be standardised, recommended and scaled up in light of the deteorating state of ecosystem.

THEME 7

Market and Value Chain Development

STRATEGIES FOR PROMOTION AND MARKETING OF ORGANIC PRODUCES

Ashutosh Singh Rajpoot[1*], Parvez Rajan[2], Ajay Raut[3] and Ashish Kumar[4]

[1,4]Department of Extension Education, College of Agriculture, JNKVV, Jabalpur

[2]Astt. Prof., JNKVV, Jabalpur, [3] Scientist (Agril. Extn.), ICAR-ATARI, Jabalpur

**Corresponding author: ashu484001@gmail.com*

The Indian organic agriculture market size reached US$ 1,582.2 Million in 2023. Looking forward, IMARC Group expects the market to reach US$ 8,918.5 Million by 2032, exhibiting a growth rate (CAGR) of 21.19 percent during 2024-2032. There has been a noticeable increase in consumer awareness regarding the health benefits of organic and sustainable foods, focus on immunity boosters. consciousness regarding health hazards associated with chemical pesticides fertilizers which has driven the demand for organic products, and increasing investments by Indian corporate firms during and after the pandemic. According to the study, supermarkets and hypermarkets, specialty stores, convenience stores, online, contract farming and others are the largest market share of product availability and accessibility. South India was the largest market for organic food and Madhya Pradesh cover largest area for organic farming. Organic produce needs to promote it and well to catch eyes of customer. It has a unique organic farm logo, packaging, advertisements. The local distribution schemes include farm shop, collaborate with a Grocery Store, local shop, food co-operative, Get Support from an Influencer, Partner Up with a Local Restaurant with their strong commitment to direct marketing should be encouraged to promote a regional marketing network. Engage with the Community members directly to create positive image and encourage people to try out organic produces also get feedback on products. Establish storage and transportation facilities. Promote farm level processing, value addition. Develop a simple certification process in the state for organic farmers. Use interest of mass media to publish on new and trendy issues. Price of the organic product about 20-30% higher than conventional products may increase the demand. APEDA provides assistance to the exporters of organic products under various components of its export promotion scheme.

MARKETING OF NATURAL FARMING PRODUCE: CHALLENGES AND OPPORTUNITIES

N.V. Kumbhare[1*] and Adupa Shanmuka[2]

[1]Principal Scientist (Ag. Extn.), ICAR-Indian Agricultural Research Institute, New Delhi

[2]Scientist, ICAR-Directorate of Groundnut Research, Junagadh

**Corresponding author: n_kumbhare@yahoo.com*

Natural farming, often characterized by its dependence on traditional and sustainable agricultural practices, has gained attention globally as a response to concerns surrounding conventional farming methods. While natural farming holds promise for ecological and health benefits, farmers engaged in this practice are confronted with a large number of challenges in marketing their produce. The limited understanding and awareness among consumers about the benefits of natural farming create hurdles in effectively positioning and promoting these products in the market. Additionally, the absence of a standardized certification system for natural farming practices adds to the

ambiguity surrounding product authenticity and quality, further complicating marketing efforts. Despite the increasing demand for organic and sustainably produced goods, consumers may be hesitant to adopt/procure natural farming products due to perceived inconsistencies in supply, higher pricing, and the influence of established agricultural norms. To address these challenges, potential strategies and interventions that could support natural farming practitioners in enhancing their marketing capabilities are to be developed. These include targeted education campaigns to raise awareness among consumers, the development of a robust certification system to establish credibility and utilizing social media and e-commerce platforms to promote and sell natural farming produce directly to consumers. Collaborate with retail chains, local markets, and grocery stores to increase the accessibility of natural farming products. In Andhra Pradesh in 2022, the Tirumala Tirupati Devasthanam (TTD) a most famous religious temple in Andhra Pradesh placed an order for 22,000 tonnes of 12 types of chemical-free agri-produce from 25,000 natural farming farmers. The TTD also supplies livestock from its cow shelters to farmers to help them prepare natural farming formulations such as *Jeevamrit* and *Beejamrit*. Explore the creation of value-added products from natural farming produce, such as organic snacks, juices, or processed goods and the creation of cooperative marketing initiatives to overcome scale-related limitations.

ORGANIC PRODUCE CHANGING LIFE DYNAMIC OF YOUTH IN HARDA DISTRICT-A SUCCESSFUL CASE

Sarvesh Kumar[1*] and **Mukesh Kumar Bankoliya**[2]

[1]Scientist (Agricultural Extension & Rural Sociology), JNKVV-KVK, Harda (MP)

[2]P.A. (Plant Protection), JNKVV-KVK, Harda (MP) 461331

**Corresponding author: sarveshkvkharda@gmail.com*

Mr. Mohenish Badar is a young dyanamic youth serving green organic vegetables, pulse and value added organic product in Harda district of Madhya Pradesh. He came in contact with Krisgi Vigyan Kendra Harda during 2016-17. He was motivated to grow organically in his fields nearer to district head quarter by KVK scientists. Since he was searching something new idea for business related to agriculture so he was convinced for the same. After some time he started organic farming in his small piece of land after completing organic cultivation for three years continuously he received organic certificate form MPSOCA, MP as Maa Annapurna Naividya BB Jaivik. Again he was motivated to open his own retail counter in the city. Fortunately, he received the honor of being the first owner of organic counter in Harda district. Now he with his younger brother Mr Mohit Badar is running the organic sale counter and placing his value added products and produce all over India through online request and booking marketing facilities. He has build a strong marketing chain for selling his products at local, state and national level and also has represented as organic farmer at many state, national and international platforms with KVK Scientists and has received many awards and honors at various occasions. Now he has established himself as s successful organic entrepreneur with happy and satisfied social life.

OPPORTUNITIES AND CHALLENGES OF ORGANIC PRODUCTS MARKET

Shalini Chakraborty[1*] and Rupendra Khandwe[2]

[1] Senior Scientist, Krishi Vigyan Kendra, Rajgarh, M.P.

[2] Senior Scientist& Head, Krishi Vigyan Kendra, Rajgarh, M.P.

**Corresponding author: shalini17576@gmail.com*

For most Asian countries, agriculture plays a vital role in the national economy. Many developing countries like India have large numbers of small farmers practicing organic agriculture to reach self-sufficiency in food or to improve soil fertility. Worldwide, the demand for organic food products appears to have expanded quickly in recent years, stimulated by consumer perceptions that organic products are safe, clean and ethical. This has given rise to a growing market for organic food products, the size of which has nearly quadrupled in India in the last three years. The market of organic products is expected to grow globally in the coming years and high growth rates over the medium term (from 10-15 to 25-30%) are expected. The organic market expansion makes it possible for farmers to reap the benefits of a trade with relatively high price premiums. However, this market is not very well known to most farmers due to the absence of sufficient technical and market information and financial support. It is therefore essential for major key players (e.g. NGOs, farmer organizations, traders, exporters etc.) that promote organic farming to have up-to-date information on the available opportunities (market requirements) and trends of the organic market. India has the potential to become a major organic producing country given the international demand for our farm products, different agro-climatic regions for cultivation of a number of crops, the size of the domestic market and above all the long tradition of environment friendly farming and living. To increase demand for organic products and to expand the organic industry, two key issues need to be addressed: farmers must be helped in their transition to non-chemical ways of farming, and they must have assured access to markets to sell their produce at good prices. While most ongoing initiatives focus on the transition through capacity-building and incentives, a lot needs to be done to provide better markets through a structured approach. Access to markets should no longer be a barrier for India's organic and natural farming movement.

ARTIFICIAL VERSUS NATURAL FRUIT RIPENING: FUTURE ALTERNATIVES

Surabhi Sharma, Aditya Shukla, Vijay Kumar[*] and Neeraj Shukla

Department of Fruit Science, IGKV, Raipur (C.G), India- 492012

**Corresponding author: vijaykumar.igau@gmail.com*

The fruits are rich in various phytochemicals, phenolic compounds, dietary fibres, vitamins, organic acids, carbohydrates, proteins and minerals which are mostly eaten when ripened. Ripening of fruits is a much-needed physiological process with its commercial application in fruit markets. In a bid to make the fruits available in local markets in advance of the seasons for fetching handsome prices, the buyer adheres to malpractices of forced fruit ripening by using harmful chemicals. The artificial ripening of fruits is of great concern at present. The use of commonly available ripening agents like carbon monoxide, potassium sulphate, potassium dihydrogen orthophosphate,

acetylene gas, calcium carbide, oxytocin, growth hormones etc. to induce ripening and change in colour of fruits are commonly practiced in India posing several health hazards.

The studies have indicated that as high as 80% fruits are subjected to artificial ripening. Of these, the most widely used is the calcium carbide being cheaper and easily available in the market and it is reported that most of sellers prefer this deadly chemical. It is reported that calcium carbide is extremely hazardous because it contains traces of arsenic and phosphorus. This chemical is banned in many countries but its use is in vogue in India and other countries for ripening of papayas, oranges, bananas and mangos. Artificial ripening of fruits by acetylene gas, commonly known as carbide gas is prohibited as per the provision in sub regulation 2.3.5 of Food Safety and Standards (Prohibition and Restrictions on Sales) Regulation, 2011. It permits the use of ethylene gas at a concentration up to 100 ppm (100µl/L) depending upon the crop, variety and maturity for artificial ripening of fruits.

The fruits ripened through Natural process are tasty, softer, colorful, nutritious, attractive and more palatable enriched with their desirable flavor, quality, and other textural properties. It is observed that naturally ripened fruits have recorded higher shelf life of fruits as compared to those artificially ripened. It is pre-requisite that the fruit sellers should resort to natural process of fruit ripening. Banana being a climacteric fruit, its ripening may be induced in storage houses which ensures uniform colour, proper texture and flavour of the fruits. It may be carried out by the most of the farmers by applying small dose of ethylene to induce ripening process under controlled conditions of temperature and humidity. It is advisable to use ethylene, the only natural plant hormone and ripening agent.

The studies have indicated that Methyl Jasmonate may be used to induce ripening of climacteric fruits which is a non-toxic substance. The quality and flavour of fruits is found to enhance only when fruits are ripened after attaining the maturity stage and natural ripening takes place at correct maturity. The other several options of natural fruit ripening include storage methods, paper bag methods, rice bin method, paddy husk or wheat straw methods etc. As per guidelines of FSSAI vide Guidance Note No.04/2018 the fruits may be ripened naturally using these methods within 4-6 days, if kept at room temperature These methods entrap ethylene around fruit and facilitates faster ripening. It may be concluded that in order to avoid the use of banned calcium carbide and non-availability of alternative ripening agents, the sellers should resort to healthy practices for fruit ripening besides use of ethylene gas permitted in India by the FSSAI vide notification dated 23 August 2016.

ENGAGING FARM YOUTH AND WOMEN IN MARKETING AND VALUE CHAIN MANAGEMENT

Arpit Somtiya[1*] and Seema Naberia[2]

[1]PhD Research Scholar and [2]Assistant Professor

Deptt. of Extension Education, JNKVV, Jabalpur

**Corresponding author: arpits0153@gmail.com*

Engagement of youth and women in agricultural value chain development is the major issue for economic development and sustainable food system in the developing economies. When women and youth are linked from production to agricultural value chains all the way to processing and marketing, they contribute in making traditional farming more productive and commercially viable. Inclusive value chains also offer work opportunities for women and youth of the farm. The crucial

contributors to agriculture, production i.e. women are not given the recognition they deserve (i.e. underpaid and undervalued). Failure to invest in women and youth farmers is one of the major contributing factors to food insecurity in the nation. Lack of productive resources limit women and youth's ability to produce the same amount in comparison to men. They own fewer assets, land, livestock, and have limited access to inputs, seeds, fertilizer, labour, finance and services, training, insurance than men. Women seldomly manage resource at the farm level. Although women perform much of the agricultural activities they are restricted by cultural norms to perform pesticide application. It is dangerous for women and children to manage chemical products due to the health risks that pesticides pose. Youth have abandoned working in agriculture due to its physical demands and lack of access to agricultural machinery. Agricultural development should be backed up with value addition, processing, branding and packaging along with strong market linkages. Increased investments in research and development, tie-up with practical education system, capacity building of value chain actors, and assurance of markets for the farmers' product could encourage youth and women in this sector. Meanwhile, an integrated effort should be made by all line departments, stakeholders and private sectors for the development of agriculture sector in India.

ROLE OF ENTREPRENEURS AND START-UPS IN PROMOTING ORGANIC FARMING AND UPLIFTING FARMERS

Abhilash Dangi[1*] and Seema Naberia[2]

Department of Extension Education, College of Agriculture, JNKVV, Jabalpur (M.P.)

**Corresponding author:abhilash0498@gmail.com*

Organic and sustainable farming methods have become more and more popular in recent years. The organic agricultural sector has experienced rapid expansion due to the growing consumer demand for more environmentally friendly and healthful food options that are free from chemicals and pesticides. According to a report, the Indian organic food market stood at a value of USD 1,510.36 million in 2023 and is expected to grow at a CAGR of about 22% in the forecast period of 2024 and 2032 to reach a value of about USD 9,043.00 million by 2032. In light of this growing market for organic products, Indian entrepreneurs and startups have started making good use of this opportunity to earn profits along with providing innovative and profitable solutions to farmers. These firms are not only helping farmers with organic production but are also helping them sell their produce to a larger market and straight to customers by removing intermediaries. Along with giving access to new technologies and farming techniques, startups are also helping farmers in many ways such as assisting farmers during the organic conversion phase, establishing market linkages, getting the right price for their produce, becoming business owners, and creating value-added products, etc. Some startups are also collaborating with FPCs for the production and sale of organic produce and products. As a result of all these activities of startups in collaboration with farmers, a more lucrative and sustainable farming paradigm is being developed which is ultimately contributing to the promotion of organic farming in the country and the upliftment of the farmers. Therefore, the role of entrepreneurs and startups is becoming significant day by day in promoting organic farming and uplifting farmers which should be adequately supported and encouraged by the government and its policies as it is a potential way forward.

MILLET BASED VALUE ADDED PRODUCTS: AS ENTREPRENEURSHIP OPPORTUNITIES OF FARM WOMEN

Neelu Vishwakarma*, Rashmi Shukla, Akshata Tomar and D.K. Singh

Krishi Vigyan Kendra, Jabalpur (MP)

**Corresponding author : neelu_vishwakarma@rediffmail.com*

Madhya Pradesh has its own special characteristics in the field of agriculture and it has also been proved in the last one and a half decade. The state has exported more than 5 lakh metric tons of organic products worth Rs 2 thousand 683 crores in the last financial year. The export of organic products of the state is increasing rapidly. In the year 2020-21, organic crops were sown in 5 lakh 41 hectares in the state. Food crops, pulses, oilseeds, vegetables and plantation crops are being produced mainly under organic farming. The increasing trend of organic farming in all these crops is mainly based on consumer demand. Consumer demand mainly depends on the quality of the food product. Millets are known as one of the most important cereal grains as it is good source of photochemical and micronutrients. Millet value based products has enhanced the enterprise opportunities as the increase in health consciousness of the people. Madhya Pradesh cultivated on 129.31 Area ('000ha) of small millets but fetching very low market price due to glut arrival and no value addition. As per the nutritional value of the crop, it is 12.96 %, high source of energy without gluten, rich availability of minerals & vitamins, best food for diabetic persons, decreases cholesterol percentages and blood sugar. Kodo, Kutki and Ragi are very nutritious small millets which use to make various healthy recipes. Millet based value added products were highly accepted increased the consumption frequency also increased the income of farm women. Small farmers and farm women have been trained for processing and value addition of millets by KVK Jabalpur. KVK has conducted 06 vocational trainings on Food processing and value addition benefited 140 farm women/ SHG women participants, 7 Method demonstrations benefited 176 farm women, 18 lectures delivered benefited 662 farm women. The study revealed that majority (62.58%) of the respondents had medium level of knowledge as well as maximum respondents has (58.42%) medium skill level about food processing and value addition activities which they have received training. It attempts a new way for the unemployed to become self-employed and profitable.

CONSUMERS BEHAVIOUR FOR ORGANIC TUR DAL IN NAGPUR DISTRICT

V. J. Rathod [1], S. N. Suryawanshi [2], M. S. More[3*], N. T. Bagde [4] and Vandana Madke [5]

1, 2 and 3 Assistant Professor and [4] I/c Professor Agril. Econ. & Stat, Section, College of Agriculture, Nagpur

[5] Assistant Professor, Agricultural Botany Section, College of Agriculture, Nagpur

**Corresponding author:moremanoj109@gmail.com*

The present study was undertaken to analyze the consumers' behavior of Organic Tur dal, total 100 consumers were selected and data pertained for the year 2021-22. Regarding knowledge of organic food, wide majority 71.00 per cent consumers were found to be knowing about 'organic Tur dal. The different age groups there was fairly high percentage of consumers who had knowledge of organic Tur dal. Less number of consumers with lower educational level was found to have less

knowledge of organic Tur dal and vice versa. The consumers known the Organic Tur dal was recorded highest in the occupation at service followed by business man. Only 15.00 per cent consumers were buying Organic Tur dal regularly whereas 56.00 per cent consumers were purchased Organic Tur dal sometimes. Regarding sources used for buying of organic Tur dal, the organic shop claimed 40.00 per cent of regular organic group, 41.07 per cent randomly organic group and 40.85 per cent overall consumers claimed to be buying organic Tur dal from 'organic shop'. The retail shop claimed 13.33 per cent regular organic group, 14.29 per cent of randomly organic group and 14.08 per cent overall claimed to be buying organic Tur dal from Retail shop. Regarding regular buying 46.67 per cent consumers were expressed that Organic Tur dal was non available in regular store, 33.33 per cent consumers were expressed that Organic Tur dal was limited in stock and 20.00 per cent consumers were expressed that Organic Tur dal at limited choice. While, the randomly buying 67.86 per cent consumers were expressed that Organic Tur dal was non-available in regular store, 14.29 per cent consumers were says Organic Tur dal was limited in stock and 17.85 per cent consumers were expressed that Organic Tur dal was limited choice.

ENTREPRENEURSHIP DEVELOPMENT IN INDIAN CONTEXT : AN EXPANDING HORIZON

Bharat Bansal*, Sanjeev Sharma, Ram Kumar Rai and Roopal Mishra

Department of Food Science and Technology, Collage of Agriculture, JNKVV, Jabalpur and

Department of Post-Harvest Process & Food Engineering, Collage of Agriculture Engineering, JNKVV, Jabalpur

**Correspondingauthor:bharat0233@gmail.com*

Entrepreneurship development is the process of enhancing the entrepreneurial knowledge and skills via structured training programmes. It deals with the study of entrepreneurial behaviour, dynamics of business, and its development and expansion. Entrepreneurship is creating and managing a new venture to achieve specific goals such as profitability, sustainability or positive impact on society. Successful entrepreneurs possess qualities such as determination, passion, accountability, and a skill set to navigate the challenges of sustaining a business. Entrepreneurship's importance lies in the following: Drives economic growth and creates new job, encourages innovation by bringing new ideas, products, and services to the market, contributes to social change by developing products or services that reduce people's dependence on outdated technologies. Entrepreneur development focuses on training individuals who are interested in commencing their venture or expanding their existing ones. Furthermore, it concentrates more on encouraging innovation and evaluating the growth potential of an enterprise. This development process helps new firms to perform better and achieve their goals and expand their businesses. As a result, the economy of a nation also improves. Moreover, it enables entrepreneurs to develop and manage their business better along with handling the financial insecurities associated with it.

MARKETING OF ORGANIC PRODUCTS IN INDIA: STATUS, PROSPECTS AND CHALLENGES

Gaurav Mishra[1*], B. K. Gupta[2] Ashutosh Suryavanshi[1] and Bhanu. P Mishra[3]

[1]Ph.D. Scholar, [2]Assistant Professor and [3]Professor and Head,

Department of Agricultural Extension, Banda University of Agriculture and Technology, Banda, U.P

*Corresponding author: *gaurav.m80501@gmail.com*

The marketing realm of organic products has experienced significant transformation, driven by changing customer tastes towards healthier and environmentally sustainable choices. This abstract explores the present condition, future possibilities, and common difficulties in the marketing field of organic products, analysing the dynamic interaction between consumer demand, industrial expansion, and emerging patterns. The organic product marketing industry is rapidly growing, with a wide range of items accessible in sectors such as food, cosmetics, textiles, and others. The increase in demand for organic products is fuelled by the growing consumer consciousness of health and environmental issues. Moreover, the growing international market and the establishment of legislative frameworks that endorse organic certifications have enhanced consumer trust and market opportunities for organic producers. Nevertheless, within this expansion, there exist complex and diverse obstacles. The primary obstacle is the substantial cost differential associated with organic products, frequently dissuading price-conscious buyers. The intricate nature of supply chains, which involves tasks such as procuring raw materials, managing distribution logistics, and ensuring product quality, pose further difficulties. Furthermore, the absence of uniform laws between nations, combined with possible occurrences of deceit in organic labelling, presents credibility concerns that erode customer confidence. Despite these obstacles, organic product marketing looks potential. Marketing innovations include digital platforms, storytelling, and direct-to-consumer approaches help reach and educate consumers. Supply chain collaborations, R&D, and sustainable farming can reduce difficulties and boost market growth.In conclusion, governments, producers, retailers, and consumers must work together to navigate organic product marketing's changing terrain. Transparency, innovation, and ethics are the keys to unlocking the organic industry's tremendous potential and assuring a sustainable, robust future for organic product marketing in the face of changing consumer tastes and global market dynamics.

OPPORTUNITIES FOR PROFITABLE MARKETING AND EXPORT OF ORGANIC MAKHANA: AN EXPLORATORY STUDY

Dhiraj K. Singh[1*], Abhay Kumar[1], I.S. Singh[2], Ujjwal Kumar[1] and Naresh Chandra[1]

[1]ICAR Research Complex for Eastern Region, Patna-800014, Bihar, India

[2]ICAR RCER Research Centre for Makhana, Darbhanga, Bihar, India

*Corresponding author: *dhirajextension@gmail.com*

Makhana (*Euryale ferox* salisbury), an important cash crop of Bihar, has all the ingredient to become future super food of India. Bihar produces nearly 56,389 tonnes of makhana seed from an area of 35,224 ha which is processed into 23,656 tonnes of popped makhana. The popped makhana is highly nutritious food rich in carbohydrate, protein and useful minerals like iron, potassium, calcium, phosphorus and sodium. It is mainly grown in stagnant perennial water bodies like ponds,

lakes, land depression, swamps, and ditches. Therefore, there is a vast scope for organic makhana production with very limited use of chemical fertilizers and pesticides. Moreover, Mithila Makhana has got its GI tag from Indian Government in August, 2022 which gives it a unique value for possible export across the world. Current study was conducted to find out marketing pattern of popped makhana in India. Primary data were collected from all the stakeholders viz. farmers, traders and other intermediaries involved in makhana value chain using survey, personal observation and group discussion methods. Secondary data was also collected and used for analysis of results. Among different channels, Farmers – Processors - Local wholesalers - Distant wholesalers- Distant retailers - Consumers was identified as most important marketing channel which is used for trading almost 70% of total popped makhana. It was observed that farmers generally sell makhana seed and not involved in processing and marketing of popped makhana. Net price received by farmers was only 10.8% of consumer price at distant market. If farmers can grow organic makhana and involve in its processing, branding and marketing through farmer's organization or cooperatives, their income can be increased significantly. Also, makhana crop has been identified under One District, One Product Scheme for Mithilanchal region of Bihar and all support for promotion and export of this crop is being provided by both central and state Government. Farmers must grab this opportunity to enhance their profitability from makhana farming.

ORGANIC FARMING MARKET: THRIVING GROWTH, SUSTAINABLE PRACTICES AND GLOBAL TRENDS FOR A HEALTHIER FUTURE

Shrishti Bilaiya[1*], Varsha Shrivastava[2], Venkateshwar Jallarph[3], Ravi Dubey[4] and AA Raut[5]

[1,3]SRF, [2]RA, [4]YP and [5]Scientist, ICAR-ATARI, Zone-IX, Jabalpur (MP)

**Corresponding author: bshrishti1000@gmail.com*

Organic Farming market is expected to witness significant growth in the coming years, primarily driven by consumer demand for healthier, more sustainable, and environmentally friendly food options. Organic Farming involves growing and nurturing crops with the use of biological materials and relying on ecological and sustainable practices preventing the use of synthetic based fertilizers and pesticides. Natural methods like crop rotation, composting, cover cropping and the use of beneficial insects to maintain soil fertility, control pests and diseases and promote animal health is practiced under this.

The global market size of organic farming is estimated to increase by USD 318.9 Billion at a CAGR of 11.1% from 2023 to 2028. India has also witnessed exponential growth after the pandemic in organic food market and in the last ten years, India has increased its organic agriculture land under cultivation by 145.10 percent, covering 2.6 million hectares of land making India fifth largest in the world.

Favorable growth of organic agricultural practices coupled with government initiatives like Paramparagat Krishi Vikas Yojana (PKVY), Mission Organic Value Chain Development for North Eastern Region, Jaivik Kheti organic e-commerce portal, National Programme for Organic Production (NPOP), Support to organic and bio-inputs in the country, etc to promote, sustain and accelerate the growth of the Organic farming is boosting growth of the Indian as well as global organic farming market. As a result of this, today India has the highest number of organic farmers (4.43 million) in the world.

The organic agriculture market presents both challenges and opportunities for farmers, businesses, and consumers alike. While there are obstacles to overcome, such as the high cost of organic production and distribution, there are also many benefits to be reaped, including increased demand for organic products and the potential for sustainable farming practices to mitigate environmental damage. By embracing the challenges and seizing the opportunities presented, we can work towards a healthier, more sustainable future for all.

EXPORT ORIENTED ORGANIC FARMING OF MEDICINAL PLANTS

P.K. Joshi[1*], N. Mehta[1] and Aditya Shukla[1]

Professor, Department of Genetics and Plant Breeding, IGKV, Raipur, CG

**Corresponding author: joshipk1964@gmail.com*

ABSTRACT

In India, around 17000-18000 species of flowering plants of which 6000-7000 are estimated to have medicinal usage in folk and documented in traditional system of Ayurveda, Siddha, Unani and Homoeopathy. Majority of the medicinal plants have been originated from India and China. The popularity of medicinal plants increasing day by day in developed countries of European countries and USA. It is estimated that around 40-50 thousand tonnes of dried herbs and plant parts to developed countries are being exported from India. Quality of material to be exported is a necessity need in global market. Currently, the world herbal trade is around USD120 billion and against it India's share is only USD 612 million. Export of medicinal plants is affected negatively due to presence of contaminants such as heavy metals, pesticides, fumigants etc. Contamination of crude medicinal plants as well as their products with pesticide residue has been increasingly reported. The presence of trace level of pesticide residues in the herbal plants, which impose serious health risks to human health. Several studies have been reported the presence of pesticide residues in medicinal plants and their preparations. There are some reports of high levels of hexachlorocyclohexane (HCH) residues in the popular medicinal plant, viz., *Withania somnifera* (L.) of Indian System of Medicine (ISM) and dashmool plant samples. In order to ehance export of herbs, the medicinal plant samples should be monitored for contaminants regardless of whether they are cultivated or collected from the wild. Organic farming of medicinal plants is one of the options also to avoid pesticide residue contamination which would strengthen international trade and safeguard the health of the consumers.

THEME 8

Agricultural Production Technologies (Conventional)

EFFECT OF INTEGRATED NUTRIENT MANAGEMENT ON NUTRIENT CONTENT AND NUTRIENT UPTAKE BY SOYBEAN UNDER RAINFED CONDITION OF MADHYA PRADESH

Abhishek Sharma[1*], P. Sirothia[2], S.B. Agrawal[1],and Rishikesh Tiwari[1]

[1]Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur (M.P.) Pin-482004

[2]Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya Chitrakoot, Satna, (M.P.) Pin-485334

**Corresponding author: soil.sharma.abhishek@gmail.com*

A field study carried out at research farm Department of Soil Science and Agricultural Chemistry, J N. K.V.V, Jabalpur ($23^0$9 N latitude 77^0 24 E longitude and 411.78 m above mean sea level) during *Kharif* season of two consequentive years of 2016 and 2017. The soil of the experimental field was deep Vertisol (*Typic Haplusterts*), which neutral in reaction (pH 7.48), 0.17 dSm^{-1} electrical conductivity and medium in OC (0.65%). The soil is medium in available N (248 kg ha^{-1}), P (14.3 kg ha^{-1}) and K (273 kg ha^{-1}) while available sulphur is in (11.3 kg ha^{-1}). The experiment consisted of eleven treatment combinations. Experiment was laid out in a RBD by replicating thrice.

Based on pooled figures over two consecutive years it was observed that the content of NPK and S was 6.67, 0.40, 3.70, 0.37, and 0.28 % respectively. Under T_{10} [100% NPK] which was at par to all the treatments except T_1, T_4, T_7 and control for N, T_3, T_5 and T_6 for P, T_3, T_5 for K and T_2, T_3, T_5 and T_6 for S. Similarly, the content of NPK and S in stover as higher in T_{10} in which 100% RDF was given however, it was comparable to T_3, T_5 and T_6 for N and P, T_3 and T_5 for K as well as T_3, T_5 and T_6 for sulphur. Similar trend was observed in uptake of these (NPK and S) nutrients. Application of treatments taken under study found to be unable to bring out of significant changes in soil properties with respect to soil pH, electrical conductivity and organic carbon. However, the N, P and K content markedly increase over control under organically amended treatments and 100% NPK when the increase in S content was higher in T_2, T_3, T_5, T_6, T_8 and T_9 only.

DEVISING A FRAMEWORK TO STUDY FARMER'S WELLBEING IN CHANGING AGRICULTURAL SCENARIO

Jagriti Rohit[1*], Anshida Beevi[1], Josily Samuel[2], K. Ravi Shankar[3] and V. K. Singh[4]

ICAR-Central Research Institute for Dryland Agriculture

[1]Scientist, [2]Senior Scientist, SDA,[3]Scientist In-Charge & Principal Scientist, Transfer of Technology Section, [4]Director ICAR-CRIDA.

**Corresponding author: jagriti.rohit@icar.gov.in*

The concept of wellbeing has received much attention in academic and policy circles in the last decade. It is now a recognized goal of public policy in many countries and supranational organizations such as the EC, OECD, and UN who are targeting substantial resources to conceptualize and measure it. The definition of Pluralistic agricultural extension and advisory services comprise "all the different activities that provide the information, (goods) and services needed and demanded by farmers and other actors in agricultural settings to assist them in developing their own technical, organizational, and management skills and practices so as to improve their livelihoods and well-being". However, current understanding of such human well-being outcomes is fragmented. Firstly, most relevant studies tend to focus on single indicators of human wellbeing such as income, consumption or

poverty. Secondly, most current studies in agrarian contexts employ objective wellbeing measures, rather than measures of subjective well-being (e.g. satisfaction with life, happiness). While it is important to combine measures of objective and subjective wellbeing there are very few studies that have jointly used and contrasted them in agrarian contexts in India. Farmers' well-being is a dynamic process that gives people a sense of how their lives are evolving. More precisely, it refers to the welfare of the farmers which is influenced by both qualitative and quantitative parameters. Wellbeing may differ from individual to individual due to differences in their socio-economic characteristics and their cognitive styles. Hence, in the present study, a multidimensional wellbeing assessment framework for agrarian system was developed to study the wellbeing of the farmers in the dryland areas. This framework consisted of material, health, security, social relations and freedom as its component.

EFFECT OF SOIL CHARACTERISTICS AND LEAF NUTRITIONAL STATUS ON DECLINE NAGPUR MANDARIN ORCHARDS IN MORSHI TEHSIL

Maya Raut[1*], Devyanee Nemade[2], Shanti Patil[3] and Shalini Badge[4]

Division of Soil Science & Agricultural Chemistry, College of Agriculture, Sonapur-Gadchiroli, Maharashtra

**Corresponding author: mayaraut1070@gmail.com*

The present investigation in relatio to Soil Characteristics and Leaf Nutritional Status in Declined Nagpur Mandarin Orchards in Morshi Tehsil of Amravati District", was undertaken during 2017- 18. Twelve orchards from declined condition were selected on the basis of their yield performance and visual observations from five locations of Morshi tehsil viz., Nimbhi, Shirkhed, Ladki, Dapori and Chikhalsawangi were elected to evaluate the soil characteristics and leaf nutritional status and fruit quality of Nagpur mandarin. Twelve soil profile samples were taken from 0-30, 30-60 and 60-90 cm depth randomly selected over the field of Nagpur mandarin and collected leaf and fruit samples were analyzed for quality parameters. The results indicated that, the soil reaction was slightly to moderately alkaline, with pH value varied from 7.41 to 8.45, EC ranges from 0.234 to 0.372 dSm^{-1} indicating the non-saline nature of these soils, free calcium carbonate varied from 5.90 to 14.50 %. Soils of declined orchard contained more than 10% $CaCO_3$ in sub surface soils. As all soils contained more than 5% $CaCO_3$, they were categorized as calcareous soils. Organic carbon showed decreasing trend with soil depth and soils contained low in organic carbon. The available nitrogen was found to be low, phosphorus was very low to low, potassium was low to very high and sulphur was low to moderate. The DTPA extractable micronutrients in soil varied from low to moderately high for zinc, iron, copper and manganese respectively.

SCREENING OF BRINJAL GERMPLASM/ HYBRIDS AGAINST ALTERNARIA LEAF SPOT INCITED BY ALTERNARIA ALTERNATA

Anil Kumar Sharma[1*], Rajni Singh Sasode[1] and R. K. Pandya[1]

[1]Department of Plant Pathology, College of Agriculture, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior, Madhya Pradesh, India.

**Corresponding author: anilbohreabvp@gmail.com*

Brinjal is one of the important nutritious vegetable of family *Solanaceae* with its medicinal values. It possesses bio-elements potassium, calcium, magnesium, phosphorus, sodium, iron, magnesium, copper and zinc required for normal body growth. Antioxidant contents of brinjal provide health promoting anti allergic, anticarcinogenic, hepatoprotective and antidiabetic responses effects. In Alternaria leaf spot disease of brinjal symptoms appeared initially as small water soaked flecks on the leaves, after 7-9 days becoming dark brown, irregular flecks with concentric rings on the leaves. The present investigation was carried out in *rabi* 2021-22 and 2022-23 in the research farm, Department of Plant Pathology, College of Agriculture, Gwalior. Out of 35 brinjal hybrids were screened under natural conditions. None of the hybrids were come under highly resistant class. One genotypes *viz.,*Uttra (9.34 %) belong to resistant class, ten genotypes *viz.,*Mukta Moti,(11.67 %), Banarsi Gol (13.67%), NBH-459 (15.34%), Jaipur local long (15.67), Pusa Kaushal-1 (16.00%), Pusa ankur (16.33), Pusa oiski (16.67),Green Pearl (19.34%), Pant rituraj (23.00%)and Jaipur local round (23.33%) belong to Moderately resistant class, twenty two genotypes *viz.,*Neelam (26.34 %), Pusa uttam (27.00 %), Pusa Upkar (27.34 %), Pusa halo began (28.34 %), Mukta Round (29.33 %), Ram nagar giant (30.67 %), Kashi sundesh (31.17 %), Pusa safed began (31.67 %), NBH-386 (34.00 %),Brinjal Beema (34.00 %), Pusa bindu (35.16 %), Kashi prakash (37.00 %), NBH-21 (38.00 %), Navneet (38.83 %), ADM-190 (40.34 %), Pusa Kaushal (41.00 %), PPL (41.34 %), Pusa bhargav (42.67 %), PPR (43.67 %), Neel Kanti (44.33 %) Pusa P K andMahi Neelam (45.34 %) were belong to Moderately susceptible class, whereas one genotype Pusa shymala belong to Susceptible class (52.00 %), while one genotype BR-112 belong to highly susceptible.

FIELD SCREENING OF LENTIL GERMPLASM AGAINST WILT OF LENTIL CAUSED BY *FUSARIUM OXYSPORUM F. SP. LENTIS*

Sanjay Kharte[*], Ashish Kumar, Jayant Bhatt, AK Jain and Swarna Kurmi

[1]Department of Plant Pathology, JNKVV, Jabalpur, Madhya Pradesh (482004), India

**Corresponding author: sanjaykharte@gmail.com*

Fusarium wilt is an economically significant disease, which is a major limiting factor in production of lentil crop. In the present investigation a set of 90 lentil germplasm were screened for their reaction towards lentil wilt for two consecutive years and it was found that based on consistent behaviour for two years, a set of six germplasm namely Mpl-04, Mpl-42, Mpl-52, Mpl-55, Mpl-60 and Mpl-74 exhibited less than1 per cent wilt incidence which were categorized as resistant germplasm. However, 24 moderately resistant, 21 moderately susceptible, 05 susceptible and 09 highly susceptible germplasm could be identified.

PESTICIDE RESIDUES IN VEGETABLES: AN ALARMING THREAT IN INDIA

Neeraj Shukla*, Surabhi Sharma and Aditya Shukla

Department of Vegetable Science

Indira Gandhi Krishi Vishwavidyalaya, Krishak Nagar, Raipur (Chhattisgarh)

**Corresponding author: shuklaniraj@rediffmail.com*

India is the second largest producer of vegetables. Vegetables are consumed in day-to-day diet, with a per capita consumption of 135gm/day. The residual toxicity in different vegetables occurs due to over usage of pesticides since vegetables are more prone to insect pest incidence. Pesticides can cause respiratory and memory disorders, birth defects, depression, neurological deficiencies, miscarriages etc. In India, the higher production of vegetables is achieved with heavy use of insecticides and pesticides (75%) however pesticides consumption is only 32% in the world. Different patterns of pesticide production and their uses have been analyzed. Plant protection products (more commonly known as pesticides) are widely used in agriculture to increase yield, improve quality, and extend the storage life of food. The studies conducted on pesticides residues in vegetables all across the country has revealed alarming threat on human health. Out of total potato samples tested, 75 % were found contaminated with endosulfan and 50% were contaminated with parathion. Tomato samples contained both endosulfan and fenvalerate as residues which were above MRL. The reports indicated that twenty-three pesticides were detected from total 48 analyzed pesticides in the samples of 20 vegetables like bitter gourd, jack fruit, french-bean, onion, colocassia, pointed gourd, capsicum, spinach, potato, fenugreek seeds, carrot, radish, cucumber, beetroot, brinjal, cauliflower, cabbage, tomato, okra, bottle gourd including leafy vegetables. Further it was reported that concentrations of chlorpyrifos in eggplant (24.02 µg/kg), cabbage (10.55 µg/kg), cauliflower (2.85 µg/kg), tomato (178.87 µg/kg) and ladyfinger (2.49 µg/kg) were found significantly higher. Likewise, the mean concentration of triazophos in eggplant (0.863 µg/kg), cabbage (2.21 µg/kg), cauliflower (0.491 µg/kg), tomato (3.01 µg/kg) and ladyfinger (2.49 µg/kg) were also found in collected samples.

Looking to this scenario of pesticides residues in vegetables, it necessitates to adopt the strategy that ensure more productivity with integrated farming approaches. Organic vegetable cultivation offers one of the most sustainable and remunerative farming systems that will also improve soil health with better resistance against various biotic and abiotic stresses. The organic approach is one of the alternatives system which leads to minimum use of harmful chemicals. The organic farming practices include use of bio-fertilizers i.e. Azospirillum, PSB etc., organic manures, bio-pesticides and healthy production practices.

USE OF ALTERNATIVE OF CHEMICAL FUNGICIDES FOR THE MANAGEMENT OF SOIL BORNE PATHOGEN *FUSARIUM OXYSPORUM*

Swarna Kurmi[1*], Sanjeev Kumar, Jayant Bhatt, A.K. Jain, Sanjay Kharte and Rajendra Patel

[1]Guest Faculty, College of Agriculture, Jabalpur

Department of Plant Pathology, JNKVV, Jabalpur 482004

**Corresponding author: prachikurmi24@gmail.com*

Alternative of chemical fungicides were evaluated under the course of investigation. Essential oils exhibit the potential of antifungal and antibacterial capacity. So twenty essential oils were evaluated against *F. oxysporum* f. sp. *pisi*. In all, various essential oils exhibit various antifungal activities. Lemongrass and thyme oil exhibit maximum zone of inhibition as in these treatment there was no growth of test pathogen recorded in all three replications after three days of incubation. Alternate poisonous chemicals with protective ones is one of the most effective ways to knock out or decrease disclosure of toxic or other hazardous products. Chemical alternative evaluation is a process that can help to recognize and measure potential chemical and non-chemical alternatives that can be utilized as substitutes to supplant chemicals. During the course of investigation, it was recorded that the maximum fungal growth was recorded in Potassium Dihydrogen Phosphate treated plate followed by jasmonic acid and chitosan respectively. There was no fungal growth recorded in Chitosan + Thyme Oil, Potassium Dihydrogen Phosphate+ Thyme oil and Salicylic Acid. Sporulation of pathogen under in- vitro condition was also recorded and best results was recorded in all the treatment which show minimum fungal growth simultaneously.

PERFORMANCE OF FARMER PRODUCER ORGANIZATION IN DISTRICT- CHHATARPUR OF MADHYA PRADESH

R.K. Singh[*] and Veenapani Srivastav

Scientist and Senior Scientist & Head, Krishi Vigyan Kendra Chhatarpur

**Corresponding author: rajiv_kvk@rediffmail.com*

FPOs are a farming association that is registered as an institution under various legal act like Company Act, Co-operative Society Act, Trust act, etc. The aim of the FPOs is to increase the income of the producers through reduce input cost and increase market linkages. In this regards KVK Chhatarpur is Cluster based business organization (CBBOs) Nominated and sponsored by National cooperative development cooperation (NCDC), New Delhi under Central Sector Scheme for Formation and Promotion of 10,000 FPOs. In this regard two FPOs constructed by KVK Chhatarpur and their name are FPO Rajnagar and FPO Nowgoan. Regarding with this First FPO registered in 29/10/2021 and their registration number DR/CTR/107961 and second FPO registered in 3/9/2022 and their registration number DR/CTR/121352.Under both FPOs, registered number of farmers are 306 and 308 respectively and their share contribution of Rupees 1000/- each member. Its consequently both FPOs have total share Rs.6,14,000/- and equally equity grant provided by NCDC New Delhi to both FPOs for support of small and marginal farmers with end-to-end service almost all aspect of cultivation from input arrangement, technical backstopping for seed production, processing, value addition and marketing. In the favor of this both FPOs developed all necessary infrastructure

facilities and registered in all line department for getting subsidies and other facilities. After that this registered organization supply of animal feed, Dalia, wheat flour, rice, pickles and mustard oil *etc* to Panna tiger reserve and procurement of 430 quintal foundation seeds of wheat. Which was produce by FPOs member from breeder to foundation seed and sell out of this seed to other farmers and line department. Organization has been also received royalty Rupees 1,75,000/- as subsidy from agriculture department under the scheme of breeder to foundation seed production programme. Both FPOs have turnover Rupees 18,00,000/- per annum and net profit Rupees 5,50,000/-from this business. Besides these presently both FPOs have number of members 1100 registered with share contribution Rs.1000 each member. Its resulted total share was contributed Rs.11,00,000/- by both FPOs members and equally equity grant and separately management cost Rs.12,14,000/- also contributed by NCDC New Delhi. KVK Scientist was provided time to time training, group meeting, interface farmers to progressive farmers, interface scientist to farmers and exposure visit to update of registered members of knowledge regarding day-by-day advance in agriculture and marketing system for eliminate the chain of intermediaries in agriculture marketing.

EXPLORING DETERMINANTS OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS) ADOPTION IN AGRICULTURAL DECISION-MAKING: A COMPREHENSIVE ANALYSIS

Antim[1*], Nikhil Vikram Singh[2] and Pratibha Singh[3]

[1]Assistant Professor, Bioved Research Institute Prayagraj, [2]ICAR, ATARI, Kanpur,

[3]Assistant Professor, Shri Megh Singh Mahavidyalaya Agra

**Corresponding author: antimshukla90@gmail.com*

This study delves into the intricate web of factors that shape the decision-making process of farmers regarding the adoption of Information and Communication Technologies (ICTs) in agriculture. Through a thorough examination of diverse agricultural settings, this research aims to pinpoint key drivers and obstacles influencing the acceptance or resistance of ICTs among farmers. The investigation spans a spectrum of dimensions, including socio-demographic characteristics, technological access, economic considerations, farm-specific attributes, perceived benefits, market dynamics, extension services, government policies, and social networks. An exploration of socio-demographic factors, such as education and age, provides insights into their role in farmers' receptiveness to ICT adoption. The study scrutinizes the significance of technology access, encompassing infrastructure, digital literacy, and the economic feasibility of ICT solutions. Farm-specific characteristics, such as farm size and crop diversity, are evaluated as influential factors in the decision-making process. Market-related factors, including access to market information and product traceability facilitated by ICTs, are explored. Additionally, the study investigates the influence of extension services, government policies, subsidies, and the broader policy environment on farmers' decisions to adopt ICTs. Furthermore, the study explores the impact of environmental factors, such as climate risks, on farmers' motivation to adopt ICTs for enhanced weather forecasting and risk management. This knowledge offers practical implications for policymakers, agricultural extension services, and technology developers, laying the groundwork for targeted interventions aimed at fostering the effective and sustainable adoption of ICTs for informed farming decisions.

EMPOWERING WOMEN FARMERS THROUGH BEEKEEPING: A SOCIO-ECONOMIC ENDEAVOR IN SATNA DISTRICT, MADHYA PRADESH

Uttam Kumar Tripathi[1*], Surendra Payasi[2], Abhishek Gautam[3], Puneet Gautam[4] and Ashish Pandey[5]

[1]Scientist and [2-5]Project Assistant

Deendayal Research Institute, Krishi Vigyan Kendra, Satna (M.P.)

**Corresponding author: uttam007tripathi@gmail.com*

This study encapsulates a comprehensive effort spanning two years, dedicated to fostering the empowerment of Scheduled Caste women in agriculture within Satna district, Madhya Pradesh. Operating within the realm of agricultural extension techniques, the primary focus has been on fostering honey production while concurrently orchestrating an array of training programs, workshops, and seminars. These initiatives, conducted under the Veerashirmani Durgavati Farmers' Producer Organization, actively engage with 310 Scheduled Caste women and 10 female directors. In the Majhgawan region of Satna district, the natural abundance of wild honey from forest covers yields significantly. However, the lack of structured markets and processing units has resulted in these yields being sold at considerably reduced prices. To rectify this, ongoing efforts aim to catalyze a transformative 'Sweet Revolution' that not only uplifts women farmers but also encourages community cohesion and local economic growth. A critical stride towards entrepreneurial development involves establishing 30 farmer interest groups specializing in small-scale beekeeping, specifically directed towards artificial honey production. This visionary initiative not only augments crop pollination but also fosters social bonding and knowledge exchange among farmers, fostering a sense of community and collaboration. While this study encompasses quantitative data detailing initial investments, recurring expenditures, and projected market income, it extends beyond financial metrics. It delves deeper into exploring the social dimensions of beekeeping, highlighting its potential to not only economically uplift women farmers but also to foster social cohesion, knowledge sharing, and community resilience. This research underscores the imperative for sustained support, emphasizing the integral role of social development alongside economic benefits within the apiculture sector.

AGROFORESTRY FOR CLIMATE CHANGE MITIGATION AND FOOD SECURITY: EXPLORING THE BENEFITS OF COMBINING TREES AND MILLET

Pooja Sharma

Ph.D. Scholar, Silviculture and Agroforestry, JNKVV, Jabalpur (M.P.)

Corresponding author: ps280393@gmail.com

Embark on a captivating journey into the heart of sustainable agriculture where the fusion of agroecology principles and organic farming systems sparks a dazzling revolution in biodiversity conservation. This abstract unveils the mesmerizing interplay between agroecology and biodiversity within the enchanting realms of organic farming, showcasing their harmonious alliance and the revolutionary promise they hold for the future of agriculture. Agroecology, a holistic symphony of

farming practices, intricately intertwines ecological and agricultural systems, optimizing resource efficiency, nurturing soil health, and championing natural pest control. Organic farming, elevated by agroecological principles, breaks free from conventional boundaries, giving rise to resilient ecosystems. This dynamic interplay fosters biodiversity at every level, from soil microorganisms to intricate agroecosystems, forming a rich tapestry of interconnected life. In the realm of organic farming, biodiversity conservation becomes an art, surpassing the absence of synthetic inputs. It involves a nuanced understanding of ecological processes, encouraging the coexistence of diverse plant and animal species. Crop rotation, companion planting, and agroforestry practices, inherent to agroecology, create dynamic landscapes that serve as vibrant sanctuaries for biodiversity. The reliance on organic inputs nourishes the soil microbiome, fostering essential microbial communities vital for nutrient cycling and robust plant health

CONSTRAINTS FACED BY SMALLHOLDER WOMEN POULTRY FARMERS IN FARMING

Raj Kumar Patel[1*], Hari, R.[1], Ruchi Singh[1] and Neelima Patel[2]

[1]Assistant Professor, College of veterinary science & AH, Jabalpur,

[2]Veterinary Assistant Surgeon, Veterinary Hospital Supiya, Rewa (MP)

**Corresponding author: patel.drraj2019@gmail.com*

Smallholder women poultry farmers play crucial role in organic global food production and contribute significantly to the livelihood of millions of people especially in developing countries like India. They are producing good quality animal source protein in their backyard. These farmers often face various challenges and constraints that impact their ability to cooperate efficiently and sustainably. Constraints faced by the smallholder poultry farmers needs to be reported. Keeping in view, present study was conducted on smallholder women poultry farmers of Mandla and Rewa district of Madhya Pradesh. Twenty respondents from four villages from each district i.e. 160 respondents were selected randomly for the study. Constraints faced by the respondents were qualitatively studied through semi-structural interview schedule on the basis of intensity of their seriousness felt by the respondents. Majority of the respondents reported that unavailability of the land and shed, high mortality rate, inferior quality feed, attack of predator and low production performanceas serious production constraints, complexity of poultry technologies, poor availability of extension and advisory services, disease out break and its management, as serious technical constraints, unavailability of credit access, difficulty in institutional credit access, high rate of interest on commercial credit access as serious financial constraints. Lack of transportation facility, rumor of zoonotic diseases and lack of marketing network were serious marketing constraints. It was concluded that smallholder women poultry farmers were practicing poultry farming with various constraints which need immediate external support for sustenance.

FIELD SCREENING OF MUSTARD GENOTYPES FOR RESISTANCE AGAINST APHID: A PROMISING APPROACH FOR PEST MANAGEMENT

Sandhya Sinha[1*] and Abhishek Shukla[2]

[1]Ph.D. Scholar, Deptt. of Entomology, College of Agriculture, JNKVV, Jabalpur, M.P.

[2]Professor (Entomology) & [2]Director Instruction, JNKVV, Jabalpur, M.P.

**Corresponding author: sinhaento1993@gmail.com*

The two-year study aimed to determine the relative susceptibility of 45 mustard genotypes to aphids (*Lipaphis erysimi* Kalt.) using a Randomized Block Design experiment. The mean aphid index values were recorded at weekly intervals throughout the crop season starting from 33 days old crop, and subjected to analysis of variance at 5% level of significance to compare different genotypes. Out of the 45 genotypes, five genotypes (Durgamani, RP-9, Aravali, RVM-2, and RH-406) were found to be resistant, with mean aphid index values ranging between 0.18 and 0.34, while 31 genotypes were found to be moderately resistant. The remaining genotypes did not show any significant resistance to aphids. These findings suggest that certain mustard genotypes possess natural resistance to aphids and can potentially be utilized in breeding programs to develop aphid-resistant mustard cultivars, which would help in reducing crop losses due to aphid infestation.

IN-VITRO CONTROL OF FUSARIUM WILT IN LINSEED: EVALUATION OF PHYTOEXTRACTS, FUNGICIDES, AND BIOAGENTS

Yashowardhan Singh[1*] and Jayant Bhatt[2]

[1]Ph.D Scholar, [2]Head and Professor, Department of Plant Pathology, JNKVV, Jabalpur Madhya Pradesh

**Corresponding author:yashdheeraj28@gmail.com*

The production of linseed is threatened worldwide by *Fusarium oxysporum* f.sp. *lini*, which causes fusarium wilt. The effectiveness of phytoextracts, chemical agents, and biocontrol agents against the pathogen was assessed in thorough research comparing different control strategies. The results showed that neem extract was a powerful phytoextract that significantly inhibited the development of *F. oxysporum* f.sp. *lini* at doses of 5%, 15%, and 30%. Of the biocontrol agents that were studied, *Trichoderma virens* was shown to be the most effective antagonist against the pathogen that infects linseed. *T. virens* was the most efficient biocontrol agent, showing the greatest degree of suppression of pathogen mycelial growth. In chemical fungicides, propiconazole demonstrated exceptional efficacy in restraining the mycelial growth of *F. oxysporum* f.sp. *lini*. It surpassed other fungicides, with difenoconazole closely trailing as the subsequent highly effective chemical control method. This research highlights a variety of approaches available for the management of Fusarium wilt in linseed cultivation. Neem extract, *T. virens* employed as a biocontrol agent, and propiconazole utilized as a chemical fungicide represent promising avenues for tackling *Fusarium oxysporum* f.sp. *lini,* providing valuable insights for linseed-producing regions worldwide grappling with this widespread menace.

FRUIT MORPHOLOGICAL AND PHYSICOCHEMICAL CHARACTERS OF DIFFERENT CULTIVARS OF MANGO

Dinesh Kumar Kuldeep* and Manmohan Singh Bhooriya

College of Agriculture, JNKVV, Jabalpur (Madhya Pradesh) India.

**Corresponding author: dineshkuldeep88@gmail.com*

Mango (*Mangifera indica*), one of the most significant tropical fruits, presents a remarkable diversity in its cultivars, each exhibiting unique morphological and physicochemical properties. This comprehensive review aims to synthesize current knowledge on the distinct characteristics of various mango cultivars, their impact on usage, preference, and the challenges and future perspectives in their cultivation and conservation. The morphological characteristics, including fruit size, shape, skin colour, and texture, were evaluated, noting that these attributes significantly influence consumer appeal and marketability. The physicochemical analysis focused on sugar content, acidity, flavor profile, and nutritional constituents. This review established that variations in sugar content and acidity directly correlate with sensory properties like sweetness and tartness, affecting consumer preferences and determining suitability for different culinary uses. Furthermore, the nutritional analysis underscored the health benefits associated with mango consumption, highlighting the fruit's richness in vitamins, minerals, and antioxidants. The study also addressed the challenges in mango cultivation, primarily focusing on the impact of climate change and disease and pest susceptibility. The variability in climate resilience among different cultivars and the emerging threats of new diseases and pests were identified as key concerns. In response, the potential of breeding programs and genetic modification efforts in developing improved traits for resistance, quality, and adaptability were discussed. The future research directions were mapped, emphasizing the exploration of underutilized cultivars to broaden the genetic base and adapt to changing environmental and market conditions. The role of technological advancements in cultivation, such as precision agriculture, and post-harvest processing techniques to enhance fruit quality and shelf life was highlighted as crucial for the sustainable growth of the mango industry.

ON-FARM ASSESSMENT OF INTEGRATED CROP MANAGEMENT IN NAGRI DUBRAJ SCENTED RICE AT FARMERS' FIELDS IN THE CHHATTISGARH PLAINS

Premlal Sahu*, Ishwar Singh, Amit Kumar Sinha, Shakti Verma and Manisha Khaparde

Krishi Vigyan Kendra, IGKV, Dhamtari, Chhattisgarh, India

**Corresponding author : premsahu0511@gmail.com*

Because to its geographical location, Chhattisgarh is frequently referred to as the "rice bowl," and "Nagri Dubraj" is the most widely used cultivar there. Farmers with limited resources can continue to produce rice thanks to organic cultivation, which also keeps the native scent of the specific region in the variety. With the opening of the global market and rising domestic consumption due to their superior quality, demand for scented rice varieties is rising daily. Organic manure has the ability to adequately meet the nutritional requirements of the crops and encourages the activity of macro and micro flora in the soil (Sharma, 2005). In this regard, scented rice production greatly benefits from organic farming. On-farm testing, or OFT, aims to assess and test research station findings in

the farmer's field and, if necessary, to improve and adjust technology for greater farmer adoption. It is validation of previously established study findings in actual farming environments. The KVK has played a key role in identifying several solutions for the issues facing the farmers in the Dhamatri District. An on-farm experiment was carried out in Chhattisgarh's Dhamtari area to compare the effectiveness of organic nutrient management with scented rice, NagriDubraj. In Kharif 2019–20, 2020–21, and 2021–22, an On Farm Trial (OFT) was carried out in farmer's fields at four distinct locations. T1: Staggered transplanting & standard techniques, T2: FYM (5.0 t/ha) + Line Transplanting (20 x 15 cm) + Two Interculture Operations by Ambika Paddy Weeder + IPM + Green Manuring + Biofertilizer (*Azotobactor* + PSB) were the treatments. The number of tillers, panicle length, weight of 1000 grains, and grain yield in scented rice cultivation were all increased by the application of green manuring + FYM (5.0 t/ha) + Use of Biofertilizer (*Azotobactor* + PSB) + Line Transplanting (20x15cm) + Two Interculture Operations by Ambika Paddy Weeder + IPM, in accordance to the results. Net monetary returns showed similar tendencies. As a result, it was found that, in comparison to traditional methods, organic inputs could be used to produce scented rice with a larger yield and better quality, which would increase its market value and present more prospects for organic agriculture in the scented rice industry.

BRIDGING TRADITION WITH INNOVATION: THE INTEGRAL ROLE OF PLANT BREEDING AND GENETICS

Vinod Kumar* and Rajani Bisen

ICAR- PC Unit (S&N), JNKVV, Jabalpur (M.P.)

**Corresponding author*: *goyal.vinod@jnkvv.org*

This study explores the symbiotic relationship between traditional natural farming practices and modern plant breeding and genetics, emphasizing the potential for innovation in sustainable agriculture. Natural farming, deeply rooted in ecological principles, can benefit significantly from advancements in plant breeding and genetics to enhance crop resilience, yield, and nutritional value while preserving the integrity of the ecosystem. Through a comprehensive review of scientific literature and case studies, we investigate the ways in which plant breeding and genetics can contribute to the objectives of natural farming. Key areas of focus include the development of crop varieties that thrive in diverse agro ecological conditions, exhibit resistance to pests and diseases without relying on synthetic chemical inputs, and maintain high nutritional value. The study delves into the importance of preserving traditional crop varieties and incorporating them into breeding programs, fostering agricultural biodiversity and resilience. An important challenge is how to benefit from genetic diversity in order to improve aspects of resilience, local adaptation and yield stability through Genotype x Environment interactions. Additionally, it examines the role of genetic technologies, such as hybridization, marker-assisted selection and genomic breeding, in expediting the development of crops that align with the principles of natural farming. Research also addresses the ethical considerations surrounding genetic modifications and the importance of participatory plant breeding approaches that involve farmers in the decision-making processes. By elucidating the potential synergies between natural farming and modern genetics, this study aims to guide policymakers, researchers, and farmers in adopting a holistic approach that combines the strengths of both traditional knowledge and modern era of plant breeding. The findings contribute to the sustainable agriculture, highlighting the role of plant breeding and genetics in cultivating resilient, high-yielding, and ecologically sound varieties within the framework of natural farming practices.

EFFECT OF NUTRIENT MANAGEMENT AND PLANT GROWTH REGULATORS ON GROWTH OF WHEAT *(TRITICUM AESTIVUM L.)*

Panch Ram Mirjha[1*], Tarun Kumar Patel[2] and Swati Thakur Mirjha[3]

[1]Assistant Professor (Agronomy), DKS CARS (IGKV), Bhatapara (Chhattisgarh)

[2]Research Scholar (Agronomy), DKS CARS (IGKV), Bhatapara (Chhattisgarh)

[3]Subject Matter Specialist, KrishiVigyan Kendra (IGKV), Bhatapara (Chhattisgarh)

**Corresponding author: mirjhabhu85@gmail.com*

A field experiment was carried out during *rabi* season of 2022-23 at Instructional farm, DKS College of Agriculture and Research station, Bhatapara (C.G.). The soil of the experimental site was clay in texture. The experiment was laid out in randomized block design with three replications. The experiment consists of ten treatments viz., absolute control (T_1), 50% RDF (T_2), 75% RDF (T_3), 100% RDF (T_4), 50 RDF + Chlormequat chloride (Lihocin) @ 0.2 % at first node (35 DAS) & boot leaf stage (60 DAS) (T_5), 75% RDF + Chlormequat chloride @ 0.2 % at first node (35 DAS) & boot leaf stage (60 DAS) (T_6), 50% RDF + Tebuconazole @ 0.1% at first node (35 DAS) & boot leaf stage (60 DAS) (T_7), 75% RDF + Tebuconazole @ 0.1% at first node (35 DAS) & boot leaf stage (60 DAS) (T_8), 50% RDF + Chlormequat chloride @ 0.2 % + Tebuconazole @ 0.1% at first node (35 DAS) & boot leaf stage (60 DAS) (T_9), 75% RDF + Chlormequat chloride @ 0.2 % + Tebuconazole @ 0.1% at first node (35 DAS) & boot leaf stage (60 DAS) (T_{10}). Wheat variety Ratan was sown on 13th November, 2022 and harvesting was done on 5th March 2023.

The result revealed that significantly higher plant height, number of tillers (m^{-2}), leaf area (cm^{-2}), number of green leaves $plant^{-1}$ and dry matter accumulation (g $plant^{-1}$) were recorded with application of 75% RDF + Chlormequat chloride @ 0.2 % + Tebuconazole @ 0.1% at first node (35 DAS) & boot leaf stage (60 DAS) (T_{10}) which was followed by 50% RDF + Chlormequat chloride @ 0.2 % + Tebuconazole @ 0.1% at first node (35 DAS) & boot leaf stage (60 DAS) (T_6). Treatment absolute control (T_1) showed inferior values for all the aforesaid parameters. Treatments had non-significant effect on plant population of wheat.

EFFECT OF WEED MANAGEMENT PRACTICES ON YIELD AND ECONOMICS OF MUNGBEAN *(VIGNA RADIATA (L.) WILCZEK)*

Panch Ram Mirjha[1*] and Swati Thakur Mirjha[2]

Assistant Professor[1*] (Agronomy), DKS CARS (IGKV), Bhatapara (Chhattisgarh)

Subject Matter Specialist[2], Krishi Vigyan Kendra (IGKV), Bhatapara (Chhattisgarh)

Corresponding author:mirjhabhu85@gmail.com

A field experiment was conducted during the kharif season of 2019 at Instruction Farm, DKS College of Agriculture and Research station (IGKV), Bahatapara (Chhattisgarh). The experiment was conducted in randomized block design with three replications. There were ten weed management practices. The cultivar used for the experiment was "IPM-2-3". The crop was sown on 14th July, 2019 and harvested on 30th September, 2019.

Results revealed that weed free treatments recorded significantly higher grain yield (1172 kg/ha), straw yield (3546 kg/ha), gross returns (Rs. 86,149 /ha) and net returns (Rs. 54,228 /ha) over weedy check closely followed by hand weeding twice at 20 and 40 DAS which was second best treatment after weed free. Although highest benefit: cost ratio (2.78) was obtained under post-emergence application of imazethapyr 35% + imazamox 35% WG @ 70 g/ha. Among the herbicidal treatment post-emergence application of imazethapyr 35% + imazamox 35% WG @ 70 g/ha recorded highest grain yield (988 kg/ha), straw yield (2965 kg/ha), gross returns (Rs. 72,596 /ha) and net returns (53,414 Rs./ha). Weedy check was the most inferior amongst all the treatment which recorded lowest grain yield (541 kg/ha), straw yield (1656 kg/ha), gross returns (Rs. 39,797 /ha), net returns (12,376 Rs./ha) and B:C ratio (1.16). Weed free conditions maintained through repeated hand weeding and hoeing have potential to fetch higher yield, though incurs higher cost.

STUDIES ON BIO FERTILIZERS WITH GRADED DOSES OF NPK ON GROWTH, FLOWERING, YIELD ATTRIBUTES AND ECONOMICS OF ANNUAL CHRYSANTHEMUM

Shalini Badge*, Maya Raut, Ommala Kuchanwar, Shanti Patil, Beena Nair, Seema Thakre and Hemlata Khobragade

Horticulture Section, College of Agriculture, Nagpur (Dr. P.D.K. V., Akola)

**Corresponding author: shalinibadge@gmail.com*

A field experiment was carried out to study the effect of bio ferlilizers with graded doses of NPK on growth, flowering, yield attributes and economics of annual chrysanthemum cv. Local during the winter season at of Horticulture Section, College of Agriculture, Nagpur. The objective of experiment was to find out the suitable dose of NPK along with bio fertilizers to get maximum flower production with high B:C ratio. The results showed that maximum vegetative growth, (i.e. height of plant, number of branches plant^{-1}, stem diameter, plant spread)initiation of first flower, days to 50% flowering, diameter of fully opened flower, longevity of flower intact on plant and yield attributes like number of flowers/plant, yield of flowers/plant (g) and yield of flowers ha^{-1} (125.18 q) with high B:C ratio (1:4.20) were significantly maximum with the treatments receiving 80% NPK + *Azospirillum* + *Azotobacter* + PSB at 5 kg/ha each followed by the treatment 80% NPK +*Azospirillum* +PSB at 5 kg/ha each over control (RDF) and rest of the treatments.

OPTIMIZING SILVI CULTURE IN AGROFORESTRY LANDSCAPES: A REMOTE SENSING APPROACH FOR SUSTAINABLE RESOURCE MANAGEMENT

Sanjay Singh Jatav*, R. Bajpai and S. B. Agrawal

Department of Forestry, CoA JNKVV, Jabalpur, (M.P.) India

**Corresponding author: sssisodiya2012@gmail.com*

This research delves into the optimization of silvicultural practices within agroforestry landscapes, employing advanced remote sensing technologies. The study investigates key parameters, such as tree growth, canopy structure, and land use dynamics, utilizing remote sensing data to inform

precise and sustainable resource management strategies. By integrating agroforestry with remote sensing, this approach aims to enhance environmental resilience, maximize resource efficiency, and contribute to the long-term viability of agroforestry systems. The integration of agroforestry with remote sensing technologies holds great promise for optimizing silvicultural practices. This approach enhances precision in resource management, fosters sustainable land use, and contributes to environmental resilience. The findings emphasize the potential benefits of leveraging advanced technology to inform decision-making for a more sustainable coexistence of agriculture and forestry.

SEASONAL ACTIVITY AND CONTROL OF MAJOR INSECT PESTS OF VEGETABLE PEA

Sheeren Parveen[1*], Abhishek Shukla[2] and A.K. Panday[3]

Ph.D. Scholar[1], [2]Director Instruction & Principal Scientist and [3]Assistant Professor

Department of Entomology, JNKVV, Jabalpur, (MP)

**Corresponding author: sheerenparveen077@gmail.com*

Study was conducted to find out the Study on seasonal activity and control of major insect pests of vegetable pea at the department of Entomology, College of Agriculture, J.N.K.V.V, Jabalpur during rabi 2016-17 Vegetable pea (*Pisum sativum*) is an important pulse crop of India. It is the second most important grain legume after soybean. It is grown in all states of the country during rabi season and because of its taste, nutritive value, fast growth and high yield this crop is patronized throughout the world. It is used as a vegetable as well as pulse. A field of 10 m × 10 m, Randomized block design (RBD) with vegetable pea variety 'Arkel' was selected for recording the population dynamics and seasonal activity of major insect pests. Regular observations were conducted during different weather weeks, to record the density ofinsect pests of pea namely: leaf miner (*Liriomyza trifolii*) pea aphids (*Acyrtho siphonpisum*) &pod borers (*Helicoverpa armigera, Etiella zinckenella*) etc. Population of Aphis craccivora was first observed in SMW # 1 (1.37 aphids per plant). Peak population of Aphis craccivora was recorded during SMW # 4 (62.30 aphids per plant) and there after its population decline gradually. Its population remained high till the maturity of the crop in SMW # 8 (21.4 aphids per plant). *Acyrtho siphonpisum* appeared at a low level for the first time in SMW # 1 (0.47aphids per plant) and the population remained low throughout the crop season (below 4.07aphids per plant). The peaks population of *Acyrtho siphonpisum* was observed in SMW # 4(4.02 aphids per plant) and in SMW # 6 (4.07 aphids per plant). Leaf infestation by *Liriomyza trifolii* was recorded to be 10% during SMW#1. Its incidence increased gradually with peak infestation of 39.34% infested leaves in SMW #5. *Thysanoplusia orichalcea* was observed in pea crop at a very low level (below 1.0 individual per plant). Its mean population was 0.15,0.32, 0.45, 0.30, 0.12 and 0.10 individuals per plant observed between SMW # 51 (2016) and SMW # 4 (2017). *Helicoverpa armigera* was recorded in pea crop at very low level between SMW # 50 and SMW# 4with peak populationof0.65 larvae per plant in SMW # 1.

KISAN FARM POND SCHEME

Shravan Yadav[1*] and Parvez Rajan[2]

Department of Extension Education, College of Agriculture, JNKVV, Jabalpur (MP)

**Corresponding author: shravanyadav594@gmail.com*

The Kisan Farm Pond Scheme is a pivotal agricultural initiative introduced by the Government of India to address water scarcity and enhance water-use efficiency in farming practices. The primary goal of the Kisan Farm Pond Scheme is to promote sustainable water management in agriculture by encouraging farmers to construct on-farm water storage structures, commonly known as farm ponds. These ponds serve as reservoirs, capturing and storing rainwater during the monsoon season and providing a crucial water source for irrigation during dry periods. The scheme incentivizes farmers to adopt rainwater harvesting techniques by providing financial assistance for the construction of farm ponds. Farmers can utilize these ponds to store rainwater, preventing runoff and ensuring the availability of water for crop cultivation throughout the year. The scheme aims to reduce dependence on unpredictable rainfall patterns and mitigate the impact of drought on agricultural productivity.

Farmers participating in the Kisan Farm Pond Scheme receive support in the form of subsidies up to Rs. 90000 and technical guidance for pond construction. The initiative emphasizes the utilization of locally available resources and encourages the adoption of eco-friendly practices to enhance the overall sustainability of water conservation efforts. By promoting the construction of farm ponds, the scheme contributes to increased agricultural productivity, crop diversification, and improved livelihoods for farmers. Additionally, the enhanced water availability supports the cultivation of high-value crops, leading to economic empowerment and resilience in the face of climate variability.

The Kisan Farm Pond Scheme aligns with broader national objectives, such as the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), and contributes to achieving water-use efficiency targets in agriculture. The scheme's success hinges on community participation, awareness campaigns, and the adoption of modern water-saving technologies. Finally, the Kisan Farm Pond Scheme emerges as a crucial intervention to address water scarcity challenges in Indian agriculture. By encouraging the construction of farm ponds, the scheme empowers farmers to take charge of their water resources, fostering sustainable agricultural practices and ensuring food security in the face of changing climatic conditions.

COMPREHENSIVE EVALUATION OF NUTRIENT MANAGEMENT STRATEGIES ON SOIL HEALTH, CROP PERFORMANCE, WEED DYNAMICS AND ECONOMIC RETURNS IN KODO MILLET CULTIVATION

Manisha Shyam*, D. N. Shrivas, Alex Khalkho, Kamini Bisth, Aastha Pradhan and Seema Naberia

JNKVV, AICRP on Small Millets, Regional Agricultural Research Station, Dindori, (M.P.) India

**Corresponding author: manishashah646@gmail.com*

Field experiment was carried out during *Kharif*– 2022-23 and 2023-24 at "C" Block, Millets Research Farm, AICRP on Small Millets, JNKVV, Regional Agricultural Research Station, Dindori, Madhya Pradesh, to study the above entitled topic. The experiments were conducted using Randomized Complete Block Design which comprised of three replication and ten treatmentsviz.,T_1: Absolute control (Unmanured and unfertilized), T_2: 100 % RDN through Vermicompost (50% at basal and 50% at 30 DAS) (PK balance through natural minerals),T_3: 100 % RDN through Neem cake (PK balance through natural minerals), T_4: 100 % RDN through FYM (PK balance through natural minerals), T_5: Green manuring+ 50% RDN through vermicompost (50% at basal and 50% at 30 DAS), T_6: Green manuring+ 50% RDN through Neem cake, T_7: Green manuring+ 50% RDN through FYM , T_8: Bio-fertilizers (*Azospirillum* + PSB + KSB),T_9: ZBNF (Beejamrutha, Jeevamrutha, hand weeding and earthing up) and *T_{10}: Check (Recommended package). Research explores the impact of various aspects of the entitled topic above. The experiment encompasses diverse treatments, including organic and inorganic fertilizers,bio-fertilizers and zero-budget natural farming practices. The study investigates pre-experiment soil conditions, post-harvest soil properties, as well as disease and pest incidence. Noteworthy findings includes, the highest nutrient content (N, P_2O_5, pH, and EC) were found to be in T_{10} (Check, Recommended package) and the maximum organic carbon percentage in T_4 (100% RDN through FYM, PK balance through natural minerals). T_8 Bio-fertilizers (*Azospirillum* + PSB + KSB) exhibited, elevated *Aspergillus* and total bacterial counts. In case of Dry matter accumulation, patterns varied across treatments, T_2 (100% RDN through Vermicompost) showing the highest accumulation at various growth stages. Yield attributing characters, such as plant height, tiller count and crop maturity were maximized in T_2, which was closely followed by T_{10} and T_5. Additionally, T_{10} demonstrated superior economic returns and benefit-cost ratio.

In this experiment, weed dynamics analysis revealed that T_{10} was most effective in controlling weed density and dry weight, with the lowest weed index. Two hand weedings at 20 and 40 days after sowing also exhibited excellent weed control efficiency. Notably, all treatments significantly outperformed the weedy check in yield attributes and overall crop yield. Furthermore, the study assessed the total NPK uptake in plants, highlighting T_{10} as the most efficient, followed by T_6, T_5, and T_3. Conversely, T_1 (absolute control) exhibited the minimum nutrient uptake.

CHARACTERIZATIONS OF LECANICILLIUM SPP. AND THEIR EFFICACY AGAINST SUCKING PEST OF COTTON

Bodhit Ramteke*, Tini. S. Pillai, Prema Manapure, Vandana Madke and Bhavana Wankhede

Professor & Head, Plant Pathology Section, College of Agriculture, Nagpur

**Corresponding author: plantpathologynagpur@gmail.com*

The test fungus was isolated from soil, from serial dilution method and from infected sucking pest. Detailed morphological studies of effective isolate (VI2) show that the fungus grew well in SDAY medium. The mycelium on this medium appeared white or creamy colored with thin cottony outgrowth on upper surface. Highest insect mortality due to *Lecanicillium spp.* of *A. gossypii* was recorded at 0.25×10^7 conidia per ml followed by 0.20×10^7 conidia per ml, least mortality recorded at 0.100×10^7 conidia per ml after 2, 4, 6, and 8 days after treatment. Similarly, in case of insect mortality of *B. tabaci*, 10^9 spores per ml was recorded highest mortality followed by 10^8 spores per ml, least larval mortality was observed at 105 spores per ml after 3, 5, 7 and 10 days after treatment.

Four different semi synthetic media namely PDA, SDAY, CMA and MEA were evaluated for better growth of *Lecanicillium spp.* and it was observed that SDAY medium (53.00 mm) showed highest growth of isolates. Temperature 25°C, humidity 95 per cent and pH 6.0 were observed as optimum for growth and sporulation of *Lecanicillium spp.*

Compatibility of *Lecanicillium spp.* with commonly used insecticides was tested. Acetamiprid was non-toxic to *Lecanicillium spp.* as no significant reduction in radial growth was noticed. Molecular detection by polymerase chain reaction with specific primers ITS1 and ITS4 was performed on three isolates. The pattern showed by PCR analysis was identical for all the isolates tested confirming their identity as *Lecanicillium spp.*

MICROBI
AGROTECH PRIVATE LIMITED

10+ Yrs legacy | 200 Outlets | No. 1 Organic Product in India
Transition of 3 million Hectares to Organic Farming
Presence in African and Asian Countries

Dr. Soil®
Liquid Bio Fertilizers

Fulfills Nutrients requirement of Crops in Natural way
Improves Soil Properties and Sustains Soil Fertility
Helps to Reduce Disease Occurrence in Crops
Controls Growth of Pathogen in the Soil
Increases Yield and Crop Quality

MICROBI
AGROTECH PRIVATE LIMITED

Corporate Office:
Chinna Complex, 1st Floor, BSF & Reva Circle, Kattigenahalli, Bagalur Main Road, Yelahanka, Bengaluru 560063
Mob: +91 95382 20005 / 97400 88770 | e-mail: info@microbiagro.com | www.microbiagro.com

"LET SOIL LIVE"

UDAY AQUA CONNECTS PRIVATE LIMITED

Uday Aqua Connects Private Limited is a start up from first generation entrepreneurs with a motto to establish aquaculture in a broad way and expand into rural parts of India to create an alternate commercial opportunity for farmers and increase inland aqua culture. It has initiated a model of "Mini Integrated Park" namely Dr. B.R.Ambedkar Aqua Knowledge Park with RAS-Bio Floc-Pond Culture in around of two acres of land located at Vaddepally Village, Nizamsagar Mandal, Kamareddy Dist., Telangana, India. It is a brand new and the top most knowledge center in Aqua Culture with real time exposure

The vision of Uday Aqua is Development of rational and sustainable Fresh water Aqua species in the form of "UDAY AQUA UNIVERSITY" with the aim to establish NH-44 as a Fresh Water Aqua Corridor of INDIA by 2025, further, to expand globally as a Commercial supplier of Murrel by 2028. Regular trainings were given to the interested farmers in modern aqua culture techniques and educate them from establishment to marketing and successfully trained near to 1500+ farmers till date and implementing new model of "Circulatory Aqua Culture System" (CAS) for farmers. Working as a Social Enterprise, we work with all sectors of SC/ST/ Women Entrepreneurs to establish strengthened cluster which helps to form a strong farmer chain in operations and marketing. With continuous effort in making a strengthened cluster, we are developing a fresh water cluster across Telangana which works as an example to establish across all states on National highway @NH44.

Mr. Cherukuneedi Uday Kishan
Managing Director, Uday Aqua Connects Private Limited
Reg. off : Plot no.49, Doyens Lakeside Township, Serilingampally (V & M), Hyderabad.-500019, Contact - 9063829909V, www.udayaquaconnects.com. Site address: Dr. B.R. Ambedkar Aqua Knowledge Park, Vaddepally Village, Nizamsagar (M), Kamareddy (D), Telangana – 503302, Contact -9063829909

SRI BIOAESTHETICS PRIVATE LIMITED (SRIBIO)

Sri BioAesthetics Private Limited (SRIBIO), Hyderabad is engaged in the Business of R&D with special reference to developing products based on plant microbiomes for seed, soil and plant health management. The company aims to develop innovative agricultural inputs for integrated crop management with special reference to improve nutrient use efficiency by the crop plants, mitigate abiotic and biotic stress environments utilizing soil, plant and insect microbiomes. SRIBIO is on a mission to help farmers grow healthy crops while controlling plant diseases, insect pests biologically. This also helps to reduce the usage of chemical fertilizers and pesticides, provides chemical free food to the growing population and safety to health and environment. SRIBIO has realized its aspirations by establishing a cutting-edge integrated agri-biotech center, equipped with world-class amenities to facilitate advanced research and uphold superior manufacturing standards. In addition to its focus on mainstream agriculture, the company is expanding into animal healthcare. This strategic move aligns perfectly with the contemporary global shift toward biological and regenerative agriculture—a sustainable farming approach that is environmentally conscious. The company is successfully led by Dr. KRK Reddy, having around 3 decades of industry expertise and was one of the first pioneers in India to establish a microbiome- based biotech company to benefit the farming community.

Sri BioAesthetics developed a translational technology platform called MyAgriBiome. MyAgriBiome is an innovative platform which allows, to efficiently capture and screen the most diverse and unique microbial collection and develop products for agriculturally relevant applications. The idea is to restructure/reengineer the crop microbiome (microbiome engineering) for improving and sustaining the nutrient supply in the soils and enhancing the health and yield of crops through sustainable practices based on microbial technologies.

Sri BioAesthetics Private Limited (SRIBIO) Plot No: G-49, TSIIC, General Industrial Park, IDA Sultanpur, Ameenpur Mandal, Sangareddy Dist-502314,Telangana State, India, Mail: sribioaesthetics@gmail.com, Website: www.sribioaesthetics.com Ph: 6309981055

Sahasra
CROP SCIENCE

PROTECT OUR SOIL TODAY
FOR OUR CHILDREN TOMORROW

Nourish the Soil with our Residue Free Organic Products

Sahasra Manufactures & Markets

- Organic Nutrients & Organic Fertilizers
- Organic Drip Products & Micro Nutrients
- Bio Fertilizers & Bio Pesticides
- Microbial & Aqua Culture products
- Animal & Poultry Nutraceuticals

Our Products are Certified for Organic Cultivation

Our Certifications

TÜV SÜD · DSIR · एपीडा APEDA · CONTROL UNION · fssai (UNDER PROCESS) · OMRI LISTED · Approved by ECOCERT INPUTS

Sahasra Crop Science Pvt Ltd

403-404, 4th floor, Block- B, Babukhan Millenium Center, Somajiguda, Hyderabad, Telangana – 500082.

Contact No: +91 9374299299 | info@sahasracropscience.com | www.sahasracropscience.com

INSEE National Conference on "Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches"
(January 28 - 30, 2024)
Local Organizing Committee

Technical Session Committee	Editorial Committee
1. Dr. Parvez Rajan, Asst. Professor 2. Dr. Sanjeev Garg, Head & Scientist, KVK-Narmadapuram 3. Dr. Sarvesh Tripathi, Head & Sr. Scientist, KVK-Ratlam 4. Dr R. K. Yadav, Head & Sr. Scientist, KVK-Alirajpur 5. Dr B. P. Tripathi, Head & Sr. Scientist, KVK-Karwadha 6. Dr Gujan Jha, Head & Sr. Scientist, KVK-Rajandgaon 7. Dr Geeta Singh, Scientist, KVK Dindori 8. Dr. Shrishti Bilaiya, SRF, ATARI, Jabalpur **Students:** 1. Mr. Ashutosh Singh Rajput, PhD (Ext. Edu.), JNKVV 2. Mr. Shravan Yadav, MSc (Ext. Edu.), JNKVV 3. Mr. Ramesh Choudhary, MSc (Ext. Edu.), JNKVV 4. Ms. Vertika Tomar, MSc (Ext. Edu.), JNKVV 5. Mrs. Varsha More, PhD (Ext. Edu.), JNKVV 6. Ms. Neha Kushwaha, PhD (Ext. Edu.), JNKVV Jabalpur	1. Dr. P.K. Singh, Pr. Scientist, DWR, Jabalpur 2. Dr. Moni Thomas, Pr. Scientist & Director, ABM, JNKVV, Jabalpur 3. Dr. Prashant Shrivastava, Asst. Professor, JNKVV, Jabalpur 4. Dr. Seema Naberia, Asst. Professor, JNKVV, Jabalpur 5. Dr. Kamini Bisht, Asst. Professor, JNKVV, Jabalpur 6. Dr. Sonam Agrawal, Asst. Professor, JNKVV, Jabalpur 7. Dr. Kinjulck C. Singh, KVK, Rewa 8. Dr. Harish M.N., Scientist, ICAR-ATARI, Jabalpur 9. Dr. Varsha Shrivastava, RA, ATARI, Jabalpur 10. Dr. Shrishti Bilaiya, SRF, ATARI, Jabalpur 11. Dr. Venkteshwar Jallaraph, SRF, ATARI, Jabalpur 12. Ms Neha Kushwaha, PhD Scholar, JNKVV, Jabalpur
Accommodation Committee	**Transport Committee**
1. Dr. A.K. Singh, Scientist, KVK-Jabalpur 2. Dr Ashish Tripathi, Head & Scientist KVK Sagar II 3. Dr K. K. Rana, PA, KVK, Umaria 4. Mr. Ravi Kumar Dubey, YP-I, ICAR-ATARI, Jabalpur 5. Mr Roshan Lal Singh, DEO, ICAR-ATARI, Jabalpur **Students:** 1. Mr. Ashish Nagar, PhD (Ext. Edu.), JNKVV 2. Mr. Mithlesh, MSc (Ext. Edu.), JNKVV 3. Mr. Mohd. Afzal, MSc (Ext. Edu.), JNKVV 4. Mr. Neeraj Upadhyay, MSc (Ext. Edu.), JNKVV 5. Mr. Siddhart Rajput, MSc (Ext. Edu.), JNKVV	1. Dr. D.K. Singh, Scientist, KVK-Jabalpur 2. Dr. B.S. Kirar, Head & Sr. Scientist, KVK, Tikamgarh 3. Dr. S.R. Dhuware, Scientist, KVK Balaghat 4. Dr B. L. Sahu, Scientist, KVK Damoh 5. Dr. R. P Bain, PA, KVK Katni 6. Mr. Shivam Mishra, YP-II, ICAR-ATARI, Jabalpur **Students:** 1. Mr. Arpit Somtiya, PhD, (Ext. Edu.), JNKVV 2. Mr. Abhilash Dangi, MSc (Ext. Edu.), JNKVV 3. Mr. Sarjeet Yadav, MSc (Ext. Edu.), JNKVV 4. Mr. Prashant Namdev 5. Mr. Sompal Choudhary, MSc (Ext. Edu.), JNKVV 6. Mr. Abhijeet Kuderiya, PhD (Ext. Edu.), JNKVV
Food Committee	**Finance & Purchase Committee**
1. Dr. D. K. Jaiswal, Professor & Head, Det. of Ext. Edu., JNKVV, Jabalpur 2. Dr. Prashant Shrivastava, Asst. Professor, JNKVV, Jabalpur 3. Mr. Ajay Bhowal, PS to Director, ATARI, Jabalpur 4. Mr. Hemraj, Scientist, KVK-Satna	1. Dr. T. R. Sharma, Deputy Registrar, Pr. Scientist, JNKVV, Jabalpur 2. Dr. Ajay Khare, Deputy Comptroller, JNKVV, Jabalpur 3. Mr. Sunil Gupta, AAO, ATARI, Jabalpur 4. Dr. M. K. Rathod, Prof. Ext. Edu. Dr. PDKV, Akola
Press, Media and Publicity Committee	**Security Committee**
1. Dr. B. S. Dwivedi, Asst. Professor, JNKVV, Jabalpur 2. Dr. S. S. Baghel, Scientist, KVK, Seoni 3. Dr. Moni Thomas, Sr. Scientist, JNKVV, Jabalpur 4. Mrs. Bharti Das Assoc. Professor, JNKVV, Jabalpur 5. Mr. Rishabh Vishwakarma, YP-II, ICAR-ATARI, Jabalpur	1. Dr. Y. M. Sharma, Security officer, JNKVV, Jabalpur 2. Mr. A. K. Dubey, Security in charge, ATARI, Jabalpur

INSEE National Conference on "Next Generation Agriculture- Organic and Natural Farming Pathways: Extension Strategies & Approaches"
(January 28 - 30, 2024)
Local Organizing Committee

Stage Management Committee	Exhibition Committee
1. Dr. Anubha Upadhyay, Professor, JNKVV, Jabalpur 2. Dr. Seema Naberia, Asst. Professor, JNKVV, Jabalpur 3. Dr. Kamini Bisht, Asst. Professor, JNKVV, Jabalpur 4. Dr. Rajini Sharma, Asst. Professor, JNKVV, Jabalpur 5. Dr. Varsha Shrivastava, RA, ATARI, Jabalpur 6. Mr. Vinod Kumar, SRF, PC Unit S & N, JNKVV, Jabalpur **Students:** 1. Ms. Upasna Digarse, Phd (Ext. Edu.), JNKVV 2. Alok Ghosh, MSc (Ext. Educ.), JNKVV 3. Ms. Kritika Dehariya, MSc (Ext. Educ.), JNKVV 4. Ms. Sweta Singh Gaharwar, MSc (Ext. Educ.), JNKVV, 5. Ms. Ritika Keshari, MSc Student (Ext. Educ.), JNKVV 6. Ms. Nikita Patel, MSc Student (Ext. Educ.), JNKVV 7. Ms. Neha Jat, MSc Student (Ext. Educ.), JNKVV	1. Dr. R. P. Sharma, Head & Sr. Scientist, KVK-Ujjain 2. Dr. Vijay Varma, Head & Sr. Scientist, KVK-Betul 3. Dr. B. S. Kirar Head & Sr. Scientist, KVK-Tikamgarh 4. Dr. Vijay Jain, Head & Sr. Scientist, KVK-Durg-II 5. Dr. R. S. Negi, Head & Sr. Scientist, KVK- Satna 6. Dr. A. K. Tomar, Sr. Scientist, KVK-Katni 7. Dr Rajkumar Patel, Asst. Professor, NDVSU, Jabalpur 8. Dr. Ranjeet Singh, SRF, ATARI, Jabalpur 9. Dr R. L. Raut, Head KVK, Balagaht 10. Dr. Sarita Singh, Scientist, KVK- Chhindwara 11. Dr. Megha Dubey, , Scientist, KVK Betul 12. Dr Akshita Tomar, Scientist, Jabalpur 13. Dr Sarveh Kumar, KVK Harda
Registration & Reception Committee	**Cultural Programme Committee**
1. Dr. Sonam Agrawal, Asst. Professor, JNKVV, Jabalpur 2. Dr. Chandrika Sharma, Lab Tech., JNKVV, Jabalpur 3. Dr. Venkteshwar Jallaraph, SRF, ATARI, Jabalpur 4. Miss Preeti Tiwari, PC, operator, ATARI, Jabalpur 5. Ms. Saumyata Singh, PC Operator, ATARI, Jabalpur 6. Mr. Ravi Kumar Dubey, YP-I, ATARI, Jabalpur 7. Ms. Chetna Pathak, PhD (Ext. Edu.), JNKVV, Jabalpur 8. Ms. Rashmita Sonare, PhD Scholar (Ext. Edu.), JNKVV 9. Kalyan Kumar Nayak, MSC (Ag. Econ.), JNKVV 10. Mamata Chaudhari, MSc (Ext. Educ.), JNKVV	1. Dr. Sonam Agrawal, Asst. Professor, JNKVV, Jabalpur 2. Dr. Rajini Sharma, Asst. Professor, JNKVV, Jabalpur 3. Dr. Chandrika Sharma, Lab Tech., JNKVV, Jabalpur 4. Dr. Sanjana Shrivastava, YP-I, ATARI, Jabalpur **Students:** 1. Ms. Vertika Tomar, M.Sc(Ext.Edu.), JNKVV 2. Mr. Alok Ghosh, MSc (Ext. Educ.), JNKVV 3. Ms. Monika Uikey, MSc, (Hort.), JNKVV 4. Ms. Meenal Kumari, MSc, (Ext. Educ.), JNKVV 5. Ms. Gita Nandanar, MSc, (Ext. Educ.), JNKVV 6. Ms. Parvati Nayak, PhD (Agronomy), JNKVV
VIP Arrangement Committee	**Poster Session Committee**
1. Mr. Uttam Tripati, SMS, KVK-Chirakoot 2. Dr. R. K. Singh, Scientist, KVK Chhatarpur 3. Dr. Sanjeev Garg, Head & Sr. Scientist, KVK-Narmadapuram 4. Dr. Sarvesh Tripathi, Head & Sr. Scientist, KVK- Ratlam 5. Dr. Ranjeet Singh, SRF, ATARI, Jabalpur 6. Dr. Rashmi Shukla, Head & Sr. Scientist, KVK-Jabalpur 7. Dr Neelu Vishwakarma, Scientist, KVK, Jabalpur	1. Dr. Sanjay Vaishampayan, Head, KVK Katni 2. Dr. A. K. Jain, Professor, Pl. Pathology, JNKVV, Jabalpur 3. Dr Vishal Meshram, Head KVK Narshighpur 4. Dr. K.V. Sahare, Head KVK Mandla 5. Dr. D. K. Singh, KVK, Jabalpur 6. Dr Rajkumar Patel, Asst. Professor, NDVSU, Jabalpur 7. Dr. Sanjeev Verma, Scientist, KVK Betul 8. Dr Pramod Gupta, Scientist, KVK, Jabalpur 9. Mr. Alok Suryavashi, Scientist, KVK Raisen 10. Mr. Manoj Pathak, FEO Agro-forestry, JNKVV 11. Dr. Venkteshwar Jallaraph, SRF, -ATARI, Jabalpur 12. Mr. Prashant Chapekar, DEO, ATARI, Jabalpur 13. Mr. Abhilash Dangi, MSc (Ext. Edu.), JNKVV 14. Mr. Shubendu Sarangi, MSc (Ext. Edu.), JNKVV

ACKNOWLEDGEMENT

We express our sincere gratitude to all the authors who have contributed their abstracts for this compilation which is to be released during the National Seminar on **"Next Generation Agriculture and Natural Farming Pathways: Extension Strategies and Approaches"**. We also thank the partners who have collaborated with INSEE to organise this conference. We are sincerely grateful to MANAGE, Hyderabad who have provided financial assistance for publication of this Book of Abstracts on Organic and Natural Farming.

Special thanks are due to the whole hearted support and involvement of ICAR-ATARI, Jabalpur in organizing and hosting this conference.

Organizing Secretary

Dr. S.R.K. Singh
Director, ICAR-ATARI, Jabalpur
Dr. D. K. Jaiswal
Prof & Head, Dept. of Extn. Education, JNKVV, Jabalpur
Dr. M. K. Rathod
Prof., Extn, Education, College of Agriculture, Nagpur


नीमास्त्र
प्राकृतिक खेती
प्रदर्शन
फसल - टमाटर
कृषि विज्ञान केन्द्र
कृषि विज्ञान केन्द्र
प्राकृतिक खेती प्रदर्शन इकाई
जीवामृत
कृषि विज्ञानं केन्द्र
मण्डला