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ABSTRACTS

2005-2019

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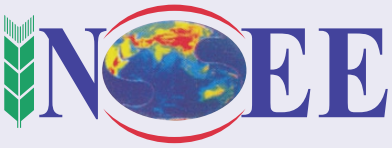
YEAR 2020



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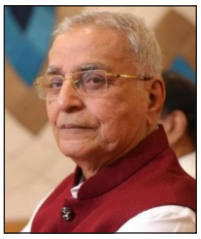

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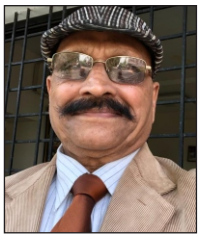

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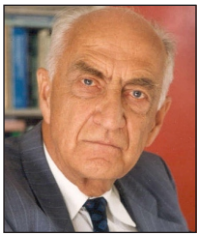

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EDITORIAL ...

International Society of Extension Education (INSEE) has published this abstract book spanning from the year 2005 to 2019. The publication contains abstracts of research papers published in International Journal of Extension Education, INSEE on need based and genuine research conducted by the Extension Education and Agricultural scientists from Various countries of the globe. Publication has been aptly divided in twenty-three sections almost covering large spectrum of the Extension Education and Agricultural field and hence we hope that it will be useful to the young and promising researchers in the respective domain for further investigations to tackle the need based problems of the rural community in developing and under developed countries all over the globe. We do invite more good research papers with global applicability for the future issues of INSEE.

INSEE has organized several International Seminars on vital subjects over last 14 years and hence their details are provided at beginning of this publication. INSEE has also conferred Life Time Achievement Awards to those dignitaries who served the cause of Agricultural and Rural Development over a major span of their life.

Large member of researches have been conducted on Agricultural Education and Training and Transfer of Technology however we hope in changing global scenario of communication and globalization, various other areas may attract the rural development and Agricultural researchers in future.

We acknowledge the help and guidance rendered by Dr. R. R. Sinha, Dr. K. Narayana Gowada and Dr. V. R. Kubde in this abstracts book.

Dr. P. O. Ingle
Dr. M. K. Rathod

CONTENTS ...

1. Agricultural Education & Training

1.1 Uma Sah , Shantanu Kumar, Singh S. K., Singh A. and Ram Kumar, 2007. Changing the Cognitive and Affective Domains of Women Dairy Farmers : Impact of Training Intervention. ***Int. J. Ext. Educ.*** **III:28-35.**

A study involved 40 trained farm women to ascertain the changes in their knowledge and attitude due to training received in Krishi Vigyan Kendra. The findings revealed that the training programme had significant influence on the level of attitude of farm women towards improved dairy farming. Further, calculated t-value was highly significant indicating a substantial gain in knowledge of farm women. The variable-family size, operational landholding, herd size, social participation, mass media exposure and economic motivation exhibited non-significant association with gain in knowledge of farm women.

1.2 Kharde P. B. and Shinde S. B., 2008. Influence of selected extension teaching methods on gain in knowledge about PPT by farm women. ***Int. J. Ext. Educ.*** **IV :65-70.**

A study was undertaken to know the various characteristics of farm women and to find out the relationship between these characteristics and gain in knowledge about pomegranate processing technology (PPT) by them. The paired 't' test and correlation coefficient were used for analysis of data. The findings revealed that the respondents had medium level of extension contact, extension participation, mass media exposure, achievement motivation and scientific orientation. These characteristics were also found to have significant relationship with the knowledge gain of respondents in most of the extension methods. The video Cassette+Folder was the most effective method in terms of gain in knowledge.

1.3 Das A. and Basu D. 2008. Relationship between Training needs and Technologies gaps of Guava Growers in two Agro-climatic Zones of West Bengal, India. ***Int. J. Ext. Educ.*** **IV: 40-47.**

The capacity building of farmers for scientific crop cultivation calls for the need based trainings which often correlates to their gaps in technological aspects so that they can effectively perform their work. This study was conducted to identify the technological gap and training needs of the guava growers in Gangetic Alluvial and Coastal Saline Zones of West Bengal. The background variables except 'area under guava cultivation' and 'market orientation' were found to be significantly differing between the guava growers in these two areas. Significant difference was also recorded in technological gaps between Kalyanpur and Ghoragacha except for 'market information' and 'post harvest technology'. The 'most needed' training areas for Kalyanpur were soil test (98.57%), insect pest management and disease management (95.71% each), 'manure and fertilizer management in the mainfield (47.14 %)' and in Ghoragacha, the most needed areas of training were disease management (89.23%), 'soil test' (87.69%)', 'insect pest management' (86.15%), manure and fertilizer management in the main field (76.92%), manure and fertilizer in the pits before planting (73.85%). The most needed training areas for both the villages were 'soil test', 'insect pest management','disease management', 'manure and fertilizer before planting in pits', 'manure and fertilizer management in the main field'. In case of technological gap, 'soil test', 'post harvest technology' and 'fruit preservation' were ranked 1st, 2nd and 3rd for Kalyanpur village; for Ghoragacha village these were 'post harvest technology', 'fruit preservation' and 'soil test'. From 't' statistic significant difference were found for most of the areas of technological gap in these two villages. In Kalyanpur village the farmer's technological gaps were reflected in their perceived training need for most of the areas. However, the farmers of Ghoragacha were keen to get training from research and extension organizations, even if they had low technological gaps for most of the concerned areas. This is perhaps, due to their constant interaction with research and extension organizations situated nearby.

1.4 Dhanakumar V. G., 2009. Institutionalizing Learners-to-Learn : India's Tea Planters' Productivity Council Perspective. ***Int. J. Ext. Educ.*** **V: 27-32.**

The field of development education, like many other fields, continuously work with ever-changing ideas and methods in capacity development programs . Development education, however, seems unique in the way new ideas, theories and strategies are tried, and in some cases, abandoned. The assumption is that current educational practices will give way to new ones. The purpose of TPC based learner-centered-learning project is to determine, if teaching on capacity building "learners to learn" enhances the acquisition of opportunities of soft skills of the planters and their stakeholders. TPC component aims to develop a strategy and validate the effective implementation of a real case of on going TPC project for initiating planters' capacity development component within Learners to learn system.

1.5 Santha Govind, 2009. Training Needs of Farm Women in Eco-Friendly Technologies. ***Int. J. Ext. Educ.*** **V: 61-64.**

In India women constitute one third of the agricultural labour force. When compared to men, women have different skills, priorities and needs. Keeping this in view, a study was taken up to assess the training needs of farm women, in eco-friendly technologies in paddy cultivation. The study was conducted among 120 farm women of Cuddalore District who were offered training in paddy cultivation. The findings of the study revealed that the respondents expressed need for most training areas of eco-friendly crop protection technologies and their training need was found to be less in eco-friendly crop production technologies in paddy crop.

1.6 Thomas Bruening H. and Crey Harry A., 2010. Participatory Education Processes in International Development. ***Int. J. Ext. Educ.*** **VI: 34-41.**

Participatory processes are proving successful in many developmental efforts. Notable examples include participatory action research, rapid appraisals, farming systems approaches, curriculum development, and rapid appraisals. These approaches help build strength at the community-level to solve local problems. Extensionists help make the transition to effective participatory models. The barriers to participation include: resources, time, lack of education, fear, past experiences and motivation. It is expected that the benefits would provide clear rational to participate and these include: increased knowledge, improved status, self empowerment, income, increased decision making skills and problems are resolved sustainably. Recommendations are the following: Participatory learning processes need to be taught as a stand-alone course and integrated into international courses. Students and Extension agents need to be taught how to develop curricula with local input. Students and extensionists need to be taught how to use participatory methods with local people. Improved impact evaluation strategies need to be developed.

1.7 Thomas Bruening H., Xiaorong Shao and Deanna Behring, 2010. Impact of a Russian-American Collaborative Education Program : A Case Study. ***Int. J. Ext. Educ.*** **VI : 23-33.**

The purpose of this three year study has been to evaluate the impact of a new model for study abroad programs in agricultural sciences. At the conclusion of each year 's program, U.S. and Russian agricultural students were surveyed to determine the impact this particular program has had on them. Both groups of students reported that they had gained much from the culture and language aspects of the program and indicated that they learned international perspectives that could not be acquired in the classroom. They also gained extensive knowledge about international agriculture. Perhaps one indicator of positive impact was that both groups of students recommended the

program to their friends. Overall, the students rated the program as "excellent" and were positive about the program and its overall impact on their future.

1.8 Gummagolmath K. C., Purushottam Sharma and Shalendra, 2013. Training Need Assessment of Officers Working in Agricultural Marketing in India. ***Int. J. Ext. Educ.*** **VIII: 63-70.**

The study was conducted with the aim to assess the knowledge and training needs of officers working in agricultural marketing across India. Data were collected from 197 officers working in different states of India. The data were analyzed using techniques such as Training Need Index, Chi square test and multiple linear regression equation Training need index for Alternative Marketing Methods was the highest followed by infrastructure Management. Food Safety and Quality Standards and Institutions and Policies in Agricultural Marketing. The officers with high knowledge have expressed their desire to undergo training. The capacity building of officers will give an opportunity for all the stakeholders including farmers to wider range of markets for their produce and also help in total supply chain management. In view of recent changes in agricultural marketing. capacity building of the officers should be conducted regularly so that, the knowledge and skills of the officers are updated from time to time. It is also required to assess the training needs of the officers with regular intervals.

1.9 Nikulsinh, M. Chauhan, 2012. Impact and Yield Gap Analysis of Trainings and FLD's Regarding Scientific Practices of Chick Pea ***(Cicer Arietinum). Int. J. Ext. Educ.*** **VIII: 44-47.**

To shore up rural development programmes, the ability of farmers should be increased through systematic training with the intention that they may understand each component of the recommended technologies. In Tapi district farmers were obtaining very low yield in Chick pea. Low productivity of Chick pea was due to lack of knowledge about scientific cultivation, poor nutrient management and lack of knowledge in IPDM. The Chick pea cultivation is highly profitable in tribal dominated areas of the Surat and Tapi district. This crop is also advisable to the farmers for improvement of the soil physical, chemical and biological health. The human health point of view this crop is highly advisable to the people of the tribal region to control the diseases related to the mal nutrition and deficiency syndromes. The study was undertaken in Tapi district of South Gujarat. The results regarding overall knowledge of Chickpea indicated that the low, medium and high level of knowledge before contact with KVK was 78.00, 16.00 & 06.00 per cent, respectively and it was changed up to 08.00, 10.00 and 82.00 per cent, respectively after contact with KVK.

In case of Knowledge regarding selected scientific innovations for Chickpea high knowledge regarding selected scientific innovations were found viz. 87.00 per cent regarding new high yielding varieties, 83.00 per cent for integrated nutrient management 81.00 per cent Land configuration and 78.00 per cent Seed rate, respectively. Majority of the farmer had low level of knowledge (76.00 %) before contact with KVK. After contact with KVK, 84.00 per cent of the farmers had high level of knowledge. The 89.00 per cent of the farmer had adopted new high yielding variety fallowed by land configuration (85.00%), INM (83.00%), seed rate (82.00%) and so on. From the above discussion, it could be inferred that after imparting training and other intensive approaches by KVK, Tapi. majority (82.00%) of the tribal farmers of these area had high the knowledge level and majority (84.00%) of the tribal farmers of these area had high adoption level about package of practices of Chick pea crop. At the end we can suggest this crop in the region is an important for increasing the income, improving the soil health, fertility and productivity and also to raise the standard of living of the tribes. The technology index indicates the feasibility of evolved technology at the farmer's field. As such reduction of technology index from 48.92per cent (2008-09) to 45.00per cent

(2010-11)exhibited the feasibility of demonstrated technologies.

1.10 Devarani Loukham, 2013. Gender Specific Perceived Training Needs of Farmers in Improved Rice Cultivation Pratices. ***Int. J. Ext. Educ.*** **IX: 8-14.**

Conducted in Maklang Gram Panchayat of Imphal West, this study aims to measure and compare the perceived training need of male and female farmers in improved rice cultivation practices. A total of 154 farmers, 76 male and 78 females were enumerated and stratified according to their land-owing status as farmers cultivating own land, sharecroppers and landless labourers.It was found that for both male and female farmers, the areas with high training need scores were seed selection and treatment, pest management and nutrient management with highest training need score in selection of pesticides. Most of the farmers have expressed very high level of training need in doses, time and method of application of chemical fertilizers. Male farmers expressed high training need in knowledge about seed treatment chemicals and their doses and female farmers in seed treatment and selection of healthy seeds for sowing. Among the male farmers, the sharecroppers were found to have higher training need score while among the female farmers, it was those cultivating their own land. All the categories of farmers have similar training need in water; material and pest management. Gender differences in training need are observed in land preparation, seed selection & treatment, water; weed, nutrient and pest management. The overall observation is that male farmers are more enthusiastic and motivated to be trained than their female counterparts.

1.11 PurnimaK. S. and M. Sreenivasulu, 2015. Training Need Assessment of Extension Officers of Southern India. ***Int. J. Ext. Educ.*** **XI: 101-104.**

Training is one of the important tools of human resource development. Extension Education Institute, Hyderabad, is a premier training institute catering to the training needs of middle level extension functionaries of line departments of client states. A regional workshop was organised to assess the training needs of middle level extension management of departments of agriculture in the southern region. For assessment of their training needs, a model questionnaire was prepared incorporating all the possible issues to be addressed for assessing the training needs of the extension personnel was developed and data were collected from 209 extension officers belonging to the department of agriculture of southern region who underwent different trainings at EEI, Hyderabad campus. The results showed that majority of the respondents were having high gain in knowledge with respect to Personality Development (80%). Management Skills, (67%) followed by Advanced Technologies (52%.). Education was found to be positively associated with training need but not statistically significant. It is also apparent that with increase in the number of trainings attended (-0.215), the desire to have training came down is evident from the association of these variables. This implies that the training needs of the respondents who have undergone more number of trainings was less. The correlation between training needs and experience (-0.15) and age (-0.044)were also negative with a lower magnitude, but not significant. In other words as the experience and age of respondent increases, the training needs decrease. The officers nearing retirement age were not inclined to go for training.

1.12 Pooja Tamta and M. A. Ansari, 2015. University Students Perception towards e-Learning. ***Int. J. Ext. Edu.*** **XI: 6-11.**

Rapid advances in Information and Communication Technologies (ICTS) have comprehensively changed the process of teaching and learning. E-Learning has emerged as one of the alternative modes of instruction delivery. Consequently, integrating e-learning into traditional modes of learning has become one of the priorities for higher educational institutions. It is

thus imperative for education researchers to determine students perception towards e-Learning in order to assess the effectiveness of such offerings. The present study was undertaken to find out the perception of students towards e-Learning. The study was conducted on Undergraduate students of a premier State Agriculture University (SAU) of India. An exploratory research design was selected for the study. An e-content was specially developed on a specific UG course based on the prescribed curriculum. The study sample included 34 registered students of B.Sc. Agriculture (III year), selected purposively and exposed to thee-content especially developed for the purpose. A structured questionnaire was used for data collection. The findings indicate that a large majority of students (91%)havepositive perceptions about e-Learning. Further, students academic performance, computer / laptop ownership, computer proficiency and frequency of computer use were found to have positive and significant correlation with students 'perception towards e-learning'. These findings might be of interest to academicians, university administrators, and policy makers involved in planning, developing and implementation of future e-learning strategies in India and other developing countries.

1.13 Ochieng. Sivia. A. Njihia, Mukirae and Osewe, D.O., 2015. Factors for School Dropouts in Primary Schools of Lake Victoria Islands, Kenya. ***Int. J. Ext. Educ.*** **XI: 1-3.**

The Kenyan government, in collaboration with other education stakeholders, has done a lot to reduce dropouts in the Kenyan schools. However, the situation has not improved much in the schools within Lake Victoria islands. This study investigates factors that lead to dropout in primary schools in Lake Victoria islands of Suba district, Kenya. Descriptive survey research design was employed. Kiwa and Kibuogi primary schools were purposively sampled for the study, being the only island schools in the district. Data were gathered using both interview schedules and questionnaires administered to two (2) head teachers, six (6) teachers, 86 school pupils and 16 primary school dropouts. The school dropouts were reached through snowball sampling technique. The study revealed that the main factors that lead to pupil drop out of school were unemployed educated family members, death of both or one parent and migration of parents. Other factors included early pregnancies, early marriages, uncaring polygamous fathers and poverty. Failure of a pupil to complete primary school cycle limits his or her opportunities in life and also drains the limited resources that countries budget with for the provision of primary education. The study had the following recommendations to control school dropout: formulation of policies to improve school progression and reduce pupil drop out if Universal Primary Education (UPE) can be achieved; establishment of low cost boarding schools to enlarge the catchment area of these schools thus increasing their efficiency: promotion of feeding programmes through Public-Private Partnership (PPP) between the Ministry of Education and Non Governmental Organizations such as UNICEF and USAID in these island schools; establishment of Adult Education program in the region to improve the level of literacy among the parents. School mapping should also be done to improve on the existing schools and locate new ones or even merge others depending on the size of catchment areas. There will help to improve retention in the primary schools.

1.14 Bhawana Rohilia and Manju Dahiya, 2016. Lack of Awareness : One of the Basic Challenges Faced by the Right to Education Act. ***Int. J. Ext. Educ.*** **XII: 96-102.**

In order to universalize elementary education. Right to Education (RTE) Act was passed by the Indian parliament on August 4, 2009. However, even after 6 years of implementation of the Act, the objectives of the Act are far from being realized. Through this research, which was conducted in Hisar District of Haryana state (India), it was found that lack of awareness about RTE Act is one of the

basic challenges faced by the Act. Irrespective of rural and/or urban orgigin, the majority of parents were unaware of the Act and its different provisions. On the other hand, teachers were well aware of the Act. Moreover, on analyzing the data, it was found that the roots of this lack of awareness about the RTE Act lie in the lack of family education, social participation, media exposure, and economic backwardness of the society.

1.15 Bhavika Joshi, Serene Shekhar and Sarita Sanwal, 2016. Entrepreneurial Talent and Willingness for Entrepreneurship among Agricultural Graduates. ***Int. J. Ext. Educ.*** **XII: 72-77.**

The study was undertaken in seven colleges of Sandarkrushinagar Dantiwada Agricultural University of Gujarat State, to seek the answer to whether the revised curriculum is able to attain its objectives of creating entrepreneurs among students. A pre-structured interview scheduled and a standardized tool was used to measure independent variables (basic profile) and dependent variable (entrepreneurial talent and willingness to set up enterprise) respectively Frequency, percentage, range correlation coefficient and CRD were used to tabulate the data. The findings revealed that 49.45 per cent of the agricultural graduates had medium entrepreneurial talent and among them only 11.66 percent of respondents were willing to start their own venture. The reason for non willingness for entrepreneurial venture was 'lack of financial assistance'. Among seven colleges, veterinary science college ranked first in entrepreneurial talent and willingness for entrepreneurial venture. Programme of study, year of study and mass media exposure showed positive correlation with entrepreneurial talent.

1.16 Ojha Pankaj Kumar and Kaly Ghade, 2016. Factors Determining Extension Education as a Career. ***Int. J. Ext. Educ.*** **XII: 36-38.**

This is inducted study at Banaras Hindu University on Career Dynamics in Education The study was carried out among 100 respondents from different agricultural institutions. It was mainly concerned to know the factors which influence the students of Agriculture sciences to choose their career in Extension Education. Attempt was made to find areas/sectors where Extension students can find their jobs or placement. The paper presents the different factors which are directly or indirectly influence the students to choose their career in Extension Education. It was found that factors like support of teachers/ counsellors, students' personality, personality, aspiration, own interest, attitude towards Extension Education, etc. play very important role in choosing Extension Education as a career.

1.17 Sap Evalwell Dkhar, A. Sarkar, R. K.Talukdar, 2017. Production-Consumption Dynamics of Legumes: A Study in Rural Meghalaya under North Eastern Hill Region of India. ***Int. J. Ext. Educ.*** **XIII :24-31.**

In the state of Meghalaya, the area, production as well as consumption of legumes are reported to be still very low. It was in this backdrop, a study was conducted to understand the underlying causes of such unsatisfactory production-consumption scenario and suggest on some remedial measures. The primary data was collected through interviewing 150 legume growers of three major legume growing districts of the state. Alongside, Participatory Learning and Action tool was employed especially for gaining comprehension of the local wisdom regarding legume cultivation. The study revealed that the average area under legumes was highest in West Garo Hills district (0.87 ha) followed in descending order by East Khasi Hills (0.33 ha) and West Jaintia Hills (0.07ha).It was also transpired that the per capita daily legume consumption in West Garo Hills district, West Jaintia Hills district and East Khasi Hills district was 77.1 6 g/day, 60.34 g/day and 43.42 g/day respectively signifying far less than the WHO's set standard of 80g/day at least for the latter two districts. The important explaining cause appeared

to be cultural incompatibility due to more preference on animal proteins overplant based ones by the respondents.

1.18 Venkataranga Naika K., M. S. Nataraju and K. Shivaramu, 2018. Policy Reforms for Quality, Agricultural Education and Needed Changes in South India - A Review. ***Int. J. Ext. Educ.*** **XIV : 18-24.**

This study is an attempt to trace the pre-requisites for quality Agricultural Education and to suggest remedies to over come the pre-requisites: (1) Quality of Faculty (2) Quality of Students (3) infrastructural Facilities (4) Course curriculum (5) Regulation of Examination (6) Teacher students interface and (7) Training needs of faculty of education Technology. The results reveal that, the qualified teachers with NET and Ph.D. were not available for teaching, many a times faculty migration to other states are not common and inbreeding is the common phenomena noticed in agricultural universities. Further, the quality of students agricultural universities are getting are the bottom 40-50%. Creamy layer students apt for JEE, and NEET and CLAT etc. The left over will join agriculture courses that too in urban colleges. The infrastructural facilities availability in urban area or colleges is more compared to rural colleges. Added to this, the curriculum should be need based and industrial oriented and should be updated from time to time. Examination and Evaluation should be regular and fair manner Pallavi (2011, Ashok 2004 and Naika 1999) cited that the quality of curriculum offered at University of Agricultural Sciences, Bangalore (UASB) in Karnataka was found to be 'useful' to the UG students in acquiring knowledge, Developing skills and overall personality development. Besides, the training needs of faculty on education and technology were in the order of application of learning theories, motivation techniques, lesion plan preparation, class room teaching methods etc. This study also illustrates suggestions and researchable prepositions which are useful to the Administrators and policy makers in order to improve quality of Agricultural Education in the year to come.

1.19 Dhanakumar V.G., 2006. Integrating a Value in Supply Chain Management for Agri-business Led Extension Service in India. ***Int. J. Ext. Educ.*** **II : 25-33.**

The study examines the theory of' supply chain management (SCM) and proposes the Integration of SCM in extension as a useful mechanism for dealing with agri-business led extension service. In a broadest sense, a supply chain refers to the way that agri-input and materials flow through different operational units of agri-business, starting with raw materials and ending with final products, delivered to the ultimate consumer. Management of materials in agri-business. Is crucial to its success because of cost of buying, production, storing, transportation, etc. Which accounts for over half of a product (production) cost. In this paper, the author gives an overview of SCM in extension to develop better ways of managing agri-business with reference to costs, procurement and market strategy to survive in an Increasingly competitive world. The Study also provides a generic measure to show how well or to what degree an extension service can integrate SCM and its value initiatives in agriculture.

1.20 Pandianand S. and K. Vijayaraghawan, 2006 Critical Thinking Abilities of Agricultural Students. ***Int. J. Ext. Educ.*** **II : 34-42.**

The agricultural education system is unable to meet the problems of the post- green revolution era. Some problems of agricultural education are due to poor pedagogical methods. The present research study was undertaken to assess the level of critical thinking abilities of agriculture students, and to find out the differences between the students of high performing university (HPU) and low performing university (LPU) in critical thinking abilities. The study has revealed that the overall critical thinking ability of agricultural students was 53.6 per cent. The students fared relatively better in lower order

cognition skills and synthesis level of higher order cognition. However, they were found to be poor at critical thinking abilities corresponding to analysis and evaluation levels. There was a significant difference between the students of agriculture of low and high performing universities with regard to critical thinking abilities. The most important critical thinking dimensions that discriminated the students of HPU from LPU were deductive reasoning, data interpretation and drawing inferences.

1.21 Vijayabhinandana B., 2006. Learning Sources Utilization by the Students of Agricultural University. ***Int. J. Ext. Educ.*** **II : 43-49.**

Learning sources play an important role in getting clarification and updating one's own knowledge. In this study an attempt was made to study the extent of utilization of various learning resources by the students of three faculties in agrivarsity. It was found that all the three faculty students regularly and frequently consult classmates and seniors for clarifying their doubts. Both agriculture and veterinary students occasionally used exhibitions/fairs, while home science students used technical magazines. Research stations and agro input agencies figured prominently in rarely and never used categories. When all 14 learning sources scores were computed for each student, majority of the students fell in medium category in utilization of learning sources. The results clearly indicate that majority of the students being stayed in the hostels approach classmates and seniors to get clarifications as well as to know the pattern of teachers in classroom situation and talk clubs must have paved the way for more discussion among the classmates and seniors. Library usage and internet usage have been found not encouraging.

1.22 Thamban C., J. Vasanthakumar and S. Arulraj. 2006. Knowledge level of Farmers About the Installation and Maintenance of Microirrigation System in Coconut Garden. ***Int. J. Ext. Educ.*** **II : 56-65.**

A study was conducted among 200 selected farmers to analyse the level of knowledge about the installation and maintenance of micro irrigation system in coconut garden. A knowledge test was developed and standardized to measure the knowledge level of the farmers on micro irrigation. The study revealed that considerable proportion of the adopters of micro irrigation technology did not possess the required level of know-why and know-how aspects, resulting in less effective field implementation of the technology. Farmers recorded lower knowledge level on items related to fertigation, location of dripping points, characteristics of farmers such as educational status, occupation, annual income, scientific orientation, information source utilization, farm size and risk preference were found to have positive relationship with extent of knowledge on recommended practices of microirrigation technology in coconut farming. Hence adequate attention is to be paid to organise educational programmes by the extension agencies to enhance the knowledge information Technology and field implementation of the microirriation technology.

1.23 Hegde R. N. and S. D. Suryawanshi. 2006. World Wide Web: An Information Tool for Banks to Market Priority Sector Loans. ***Int. J. Ext. Educ.*** **II : 76-84.**

The banking system is the backbone of the economy and Information Technology, in turn, has become the backbone of the banking industry. Technology, which was playing a supportive role in banking, has come to the forefront with ever increasing challenges and requirements. Banks can not think of introducing a financial product without information technology support. The present study is focused on the website of Bank of Maharashtra in comparison with websites of State Bank of India, Canara Bank, United Bank of India, Punjab National Bank and Indian Bank. It was revealed that most of the items in the websites were common and contained information needed by the customers, including farm loan clientele.

1.24 Tambade L. R. and S. D. Suryawanshi, 2006. Correlates of Personal Characteristics of Students and Interest in Distance Agricultural Education. ***Int. J. Ext. Educ.*** **II : 85-88.**

The correlation of Personal & Socio-economic characterizes of students and interest in distance agricultural education was studied at Open Institutes of distance education, Solapur during 2005-06. The students expressed that their interest in distance agricultural education as a job opportunity course more than that of general education, whereas 15.55% said that they are interested in work for development of farmers. 8.88 per cent students opted distance agricultural education, as they did not get chance in other courses which required higher per. centage of mark.

1.25 Archana Raj Singh and Sunita Sihag, 2006. Use of Indigenous Practices Related to Post-harvest Operations in Cereals. ***Int. J. Ext. Educ.*** **II : 98-100.**

India is self sufficient in food grain production but a huge quality of the food grain damaged due to inadequate post harvest operations by the farm families. Present time calls for documentation and recording of traditional practices followed by farm women in the field of post-harvest technology so that their uses can be made to prevent post-harvest losses. An effort was made to explore indigenous practices of post-harvest technologies in cereals. The sample consisted of 150 respondents from Hanumangarh district. Data was collected through interview method. Findings revealed that majority of the respondents use to dry their produce under sunlight. Neem leaves, match boxes, wheat straw and ash were used for storage of grains.

1.26 Radhakrishna R.B. and V.V. Veerabhadraiah, 2005. Revitalizing Agricultural Extension Curricula in the 21st Century: Implications for Indian Agricultural University. ***Int. J. Ext. Educ.*** **I : 27-32.**

Agricultural universities modelled on the tripartite mission of the U.S. land grant were established in India to produce the technical manpower through education. As a result of these rapid changes, a need exists for reexamining the agricultural extension curricula to meet the challenges of the 21st century. This study examines the continued relevance of current agricultural extension curricula in Indian agricultural colleges and universities in the context of changes occurring in Indian agriculture. The changing agricultural scenario has provided both challenges and opportunities for agricultural extension educators to revitalize curricula. Need exists for integrating knowledge from different disciplines and from basic and applied sciences. Strategies suggested include : interdisciplinary approach to course development, distance education, networking with private agencies and NGOs and linkage between research and extension.

2. Agro tourism

2.1 Yadav D. B., D. J. Sanap and R. H. Misal, 2018. Socio-Economic Appraisal of Agro-Tourism in Maharashtra. ***Int. J. Ext. Educ.*** **XIV : 41-54.**

The investigation was conducted with keeping in view tire overall objectives of studying tire Socio-Economic Appraisal of Agro-tourism in Maharashtra. The study was conducted to examine costs(fixed cost and variable cost), gross returns, benefit-cost ratios, payback period, break-evert point, and problems faced by tire ATC (Agro-Tourism Center) owners. The data were based on a sample of 4 ATCs selected from three districts; two from Pune, one from Satara and one from Ahmednagar district. The primary data were obtained by directly contacting the ATC owners. The study revealed that, the fixed cost incurred on establishment, initial investment costs was the highest (i,e. Rs. 2,04,32,20D) for JMKPK (Jay Malhar Krishi Paryatan Kendra, Morachi Chincholi, 2008), followed by AETB (Agri and Eco-Tourism, Baramali, 2004) (Rs.1,54,40,000), VATW

(Vishwakirti Agri-Tourism, Wadegavhan, 2014) (Rs,1,08,38,40D) and JATB (Janki Agro-Tourism Borgaon, 2015) (Rs.67,62,000) ATC. The major items of the fixed cost were land; construction structures of ATC, irrigation structure sand tools, implements and machineries of ATC. Variable cost of ATC was highest (i.e.Rs. 75,72,433) for AETB ATC, followed by JMKP (69,16,426), VATW (Rs. 25,72,304) and JATB (Rs. 23,62,485) ATC. The major items of the variable cost were maintenance cost of ATC and labour charges of ATC. The tourist 's arrival were maximum at AETB (28,576),followed by JMKP (21,387), VATW(10,337) and JATB (8,792). Benefit-cost ratios of ATCswere worked at variable cost and total cost. The B:C ratios of JATB, AETB, JMIKP and VATW at VC were 1.36, 1.39, 1.37 and 1.79, respectively. The B: C ratios of JATB, AETB, JMKP and VATW at TC were 0.86,0.99, 0.86 and 0.97, respectively. The running of ATC at VC was found profitable, however the ATCs were seen to be in loss at total cost as the B: C ratios noticed to be little less than unity (one) this is because of negligence towards the Agro Tourism in starting years. The payback period of ATCs at overall level was 7.56 years i.e. length of time required to recover tl1e initial investment of outlay was 7.56year of Agro-tourism business.

3. Agricultural Management

3.1 Anand T. N. and V. Veerabhadraiah, 2005. Sustainability of Dry Land Farming. *Int. J. Ext. Educ.* I : 59-70.

The study was conducted in dry zones of Southern Karnataka during the year 2002. A majority of the farmers possessed low to medium knowledge (73%) and adoption (71%) of overall resource conserving technologies. A majority of the farmers had the knowledge of more than 50 per cent of the Resource Conserving Technologies (RCT) and adopted only 18 per cent of them. Agricultural labour work was the subsidiary occupation of a majority of the farmers. Undependable rainfall, high cost of input, low price for the farm produce were the main problems of farmers and they suggested to implement watershed programmes by the government, fixing procurement price based on cost of production, timely procurement, simplification of procurement procedure and developing technologies based on the availability of inputs, as measures of sustainability.

3.2 Ewuola S. O. and I. A. Ajibefun, 2005. Selected Media and Socio-economic Factors Influencing Innovation Adoption by Small Farmers. *Int. J. Ext. Educ.* I : 83-89.

An attempt was made to study the television, radio, farmers training as well as socio-economic factors that influence the adoption of improved farming technologies in Ondo State, Nigeria. Descriptive statistics and regression analysis were used.Results emanating from the study indicated that the television, radio and farmer's training were not very largely used by the small farmers. Radio programs and educational levels play significant roles in the adoption of improved farming practices in the area. Most of the innovations that were being disseminated to the farmers in the study area had very low adoption rate.

3.3 Radhakrishna R. B. and V. Veerbhadraiah, 2005. Globalization and World Trade Organization (WTO) : Implications for gram Development in India. *Int. J. Ext. Educ.* I : 91-96.

Globalization is a key term for international agricultural and extension educators. Simultaneously with the liberalization of the economy and international trade, it calls for a reorientation of extension systems worldwide. The establishment of the World Trade Organization (WTO) and General Agreement on Trade and Tariffs (GATT) in 1994 have brought tremendous changes in the agricultural situation in India. The purpose of the study was to develop a framework to identify program development, program delivery and information needs of extension professionals and farmers in India, in light of globalization and WTO.

Potential development, topics, delivery methods and audience for extension programs were identified into the three categories proposed by Boyle's (1981)gram goals approach institutional, informational and developmental programs. Information and communication technology was identified as having a potential to play a major role in disseminating the latest technology to farmers. A well-established research-extension focus is needed to adequately address the challenges of globalization and WTO.

3.4 Chauhan N. M. and N. B. Chauhan, 2007. Extension Management ability of the Programme Coordinators of Farm Science Centres/ rishi Vigyan Kendras of India. ***Int. J. Ext. Educ.*** **III : 52-60.**

The study was carried out selecting a random sample of 160 Programme Coordinators of five years old KVKs of all the eight zones of India with full-fledged activities in the service of farmers. The Ex-Post-Facto Research Design was used for this study. The data were collected through mail questionnaire as well as interview schedules either by contacting through post or personal contacts. The suitable statistical tools were used to analyze data. The study reveals that slightly more than half of the programme coordinators of KVKs had high level of planning ability (51 per cent), majority of them had medium to high level of organizing capacity (85per cent), high level of ability of directing their subordinates (77 per cent), high level of ability of communicating (58 per cent), medium to high level of capacity to maintain human relations (92 per cent), high level of lead taking behavior (62 per cent), high level of supervising ability (71 per cent), high level of coordinating ability (62 per cent) and medium level of overall extension management ability (69 per cent), whereas slightly less than half of the programme coordinators had high level of decision making capacity (45 per cent) and high level of controlling power (48 per cent). The personal variables of programme coordinators of KVKs such as; young age, higher education, vigorous status of health and rural native place, organizational variables like conducive organizational climate, needed organizational facility and better interpersonal communication, socio-psychological variables extrovert personality and positive attitudes towards extension work and low level of job stress played significant role on their extension management ability. The positive attitude towards extension work, extrovert personality and favourable organizational climate together accounted 55. 70 per cent variation in extension management ability of the programme coordinators of KVKs .

3.5 Rama Radhakrishna and Daney G. Jackson, 2008. Evaluating Agricultural Programs/Projects : Challenges and Opportunities. ***Int. J. Ext. Educ.*** **IV : 19-26.**

Evaluation of agricultural programs/projects is a challenging and time consuming task. Several factors ate to be considered in evaluating agricultural programs, mainly bemuse of the conditions environmental, economic, social, and political, in which agricultural programs/projects are developed, implemented, and evaluated. Literature relative to evaluating agricultural programs/projects suggests many challenges and problems. These include: 1) lack of time resulting in inadequate plans to evaluate projects, 2) extensive reliance on a single method of evaluation, 3) lack of readily available, valid, and reliable evaluation instruments, 4) varying definitions of program outcomes and indicators 5) scattered sources of evidence, 6) lip service given to evaluation plan components in project proposals, 7) lack of evaluation skill among field-based evaluation personnel, 8) implementation fidelity, and 9) cultural and language barriers, especially in international settings. The purpose of this paper is to document challenges in evaluating agricultural programs, including programs that emphasize sustainability. A second purpose is to share some key evaluation models appropriate for evaluating agricultural programs, and lastly, suggest strategies

for improving evaluation efforts to document outcomes of agricultural programs/ projects.

3.6 Dhanakumar V.G., 2008. Grassroots Institution Building and Operational Dimensions for Agri-Business and Management. *Int. J. Ext. Educ.* IV : 13-18.

Institutionalizing people's grassroots organization such as SHGs and its network have emerged as a strategic extension approach (SEA), to promote functional interest of the society. This paper makes an attempt to understand functional and business network aspects of grassroots institution and arrive a strategy at possible ways sustain value system and its potential character. Theoretically, the advantage of SHGs for the benefit of financial intermediation has been very well documented. If is therefore, necessary that efforts to form people's institution to adopt group-based approach in many of the government and corporate based programmes. While the formation of full - fledged SHGs, Producers' Societies and its federations are a desirable steps, in terms of the future role of SHG as empowered grassroots institution. It is necessary that care should be taken adequately to implement SHGs in the country, without harming the basic principles and functional structure of SHGs. This article develops a comprehensive framework and module to address conceptual and methodological issues related to grassroots institution building and its sustainability for agri-business operations.

3.7 Burton E. Swanson, 2008. Redenning Agricultural Extension's Role in Achieving Sustainable Rural Development. *Int. J. Ext. Educ.* IV : 1-12.

The basic thrust of this paper is that national agricultural extension institutions need to be transformed from largely technology transfer systems, which were successful in helping fanners adopt Green Revolution technologies during the 1970-BOs, into more non formal education/ innovation systems that can help transform the economic: social and technical skills of small-scale farm households. The obvious goals of this second approach are to both increase farm income and improve rural livelihoods. A third, but equally important goal is for farmers to utilize sustainable natural resource management practices to reduce land degradation and to utilize water resources more efficiently After introducing the agricultural innovations system framework, the first-section identifies the primary clientele groups within each household and the type of skills and knowledge needed by these household members if they are to achieve these three concurrent rural development goals. The focus then moves into the type of extension programs needed, to assist farmers, farm women and rural young people in developing the necessary skills and knowledge to help achieve these goals, The final section outlines the organizational and management issues that must be addressed to successfully implement this new agricultural innovations extension strategy.

3.8 Ankaiah Kumar K. & G. Eswarappa, 2009. Personal, Socio-psychological and Organisational Characteristics of Different Stakeholders in Relatin to Co-ordination Process of Agricultural Technology Management Agency.*Int. J. Ext. Educ.* V : 33-43.

The research study was conducted in Chittoor district of Andhra Pradesh during 2007-08, with the sample size of 120 Extension Functionaries involved in ATMA. The major findings of the study revealed that, among personal, socio-psychological and organizational variables viz., decision making ability, attitude towards work, achievement motivation and Research -Extension -Fanners linkages of the total respondents involved in ATMA found to be high. Whereas, majority of stakeholders received medium level of training and memberships in professional societies. So also the organization climate, job autonomy, perceived work load and stress on job perceived medium level of categorization. Communication methods used and cosmo politeness of the stakeholder involved in A TMA was found to be low. Whereas, decision

making ability, communication methods used, memberships in professional societies, organization climate, job autonomy and research -extension-farmers linkages show significant association with coordination process of ATMA in Chittoor district of Andhra Pradesh.

3.9 Patra N.K., M.N. Odyuo and Sagar Mondal, 2015. Indicators of Effective Management of Development Work by Non Government Organizations in Nagaland, India. ***Int. J. Ext. Educ.*** **XI : 90-100.**

A study was conducted to identify the indicators of effective management of development work by Non-Government Organizations in Nagaland, India. In this study 120 employees (45 from higher level and 75 from lower level) of 45 NGOs from six districts have been purposively selected as respondents. Data were collected by personal interview method. For analysis of data 'Factor Analysis' using Principal Component Method was followed. Out of 53 variables, 16 factors have been extracted through varimax rotation technique. Factors similar in nature were grouped together and indicators were named on the basis of similarity of variables representing the factors in the group and arranged on the basis of total percentage of variance explained by the factors. In this way five indicators of effective management of development work by NGOs in Nagaland have been identified. According to importance these indicators are: Coordination and Communication; Rural Infrastructure Development and Promoting Group Approach; Controlling; Natural Resource Management and Capacity Building.

3.10 Archana P, M Jagan Mohan Reddy and I. Sreeenivasa Rao, 2016. Constraint Analysis of Watershed Farmers and Officials on Natural Resource Management in Watershed Areas of Andhra Pradesh State.***Int. J. Ext. Educ.*** **XIII : 54-62,**

The study is based on the constraints and suggestions elicited by the watershed farmers on NRM. These constraints were grouped under six categories namely watershed related psychological, situational, technical, socio- economic and financial constraints. The constraints and suggestions under each category were ranked based on frequency and percentage. The paper also describes the constraints and suggestions namely watershed related, organizational, technical financial, job related and extension constraints.

4. Constraints in Agriculture

4.1 Balamurugan V. and M. Vetriselvan, 2011. Constraints Experienced by the Marginal Farmers in Sugarcane Cultivation. ***Int. J. Ext. Educ.*** **XII : 21-23.**

The present study was taken up in Cuddalore District of Tamil Nadu. The main objective of the study was the constraints experienced by the sugarcane growers. The results revealed that majority constraints experienced in sugarcane technologies, high cost of inputs und labour, delayed cutting orders, non-availability of labourers, crop lodging and lack of road facilities.

4.2 Syed Shakir Ali, N. R. Koshti and Anita Deshmukh, 2014. Impact of Cluster Promotion Programme on Socio-economic Status of Sericulturist. ***Int. J. Ext. Educ.*** **X : 127-130.**

Cluster Promotion Programme (CPP) was enforced by Central Sericulture Board unitedly with Directorate of Sericulture, Maharashtra throughout the years 2007-10. The present paper analyzes the impact of CPP on socio-economic standing of sericulturists in Osmanabad district. In all hundred and fifty sericulturists were selected by "probability proportionate sampling size technique" from eight talukas and twenty five villages. Information was collected by personal interviews with sericulturists. The findings disclosed that almost one fourth of the sericulturists (24.00 percent) managed to extend sericulture financial gain from 25.01 to 50.00 per cent, whereas, 19.33 per cent sericulturists detected 50.01 percent to 75.00 percent increase in financial

gain from sericulture. Majority of the sericulturists (37.33 %) enlarged their annual financial gain 25.01 to 50.00 per cent. The 64.00 per cent of sericulturists reportable amendment in social life within the range of 25.01 to 50.00 per cent owing to CPP. The results of the current study have a very important policy implication for the promotion of sericulture development in Maharashtra in general and Osmanabad district in particular.

4.3 Ujjwal Kumar, Abhay Kumar and K. M. Singh, 2011. Constraints and Drudgery in Makhana Cultivation. ***Int. J. Ext. Edu.*** **VII : 47-51.**

Makhana is an aquatic crop with immense export potential and it is an important source of income for poor fishermen. Out of total makhana produced in India, more than 80% makhana is produced in Bihar alone. Although it is a high value crop but farmers associated with makhana are still very poor. The study is based on information obtained from 400 farmers of two major makhana growing districts, namely, Madhubani and Katihar of Bihar; to identify the constraints associated with makhana cultivation under different eco-systems. Since makhana cultivation is labour intensive, attempts were also made to know the drudgery involved in different operations of makhana cultivation. Based on focus group discussions with the different stakeholders, seven main constraints were identified for preferential ranking by the makhana growers. Lack of ownership of the pond/ land was the major constraint followed by lack of scientific knowledge of cultivation and highly skilled operations involved in makhana cultivation in both the districts. Harvesting was found to be the most drudgerous operation in makhana cultivation as reported by farmers of Katihar and Madhubani.

4.4 Syed Shakir Ali, L.B. Kalantri and Anita S. Deshmukh, 2012. Reasons for Decline of Ber Orchards in Solapur District. ***Int. J. Ext. Educ.*** **VIII : 83-88.**

The present study was carried out in three talukas of Solapur district in Maharashtra state with the following objectives viz to study the extent of decline in are under ber to study the relationship of selected personal, situational, socio economic and psychological characteristics to be growers with the extent of decline in area under ber and to study the reasons for decline ber orchards. Findings revealed that majority of the respondents possessed low level of knowledge about the recommended ber cultivation practices. The per cent change in area under ber was 36.77 per cent and majority of the respondents had high decline in area under her orchards which was shifted to pomegranate and other crops. Findings of relational analysis revealed that education, land holding, annual income, socio-economic status and experience in ber cultivation were positively and significantly correlated with knowledge. While land holding, size of orchard annual income, socio-economic status and knowledge were negatively and significantly correlated with decline in area under her orchards. Further the results of multiple regression analysis revealed that variables namely land holding, socio-economic status and experience in ber cultivation had significant contribution in the variation of knowledge. Whereas age, education, size of orchard and socio-economic status had contributed significantly in the variation of decline in area under ber orchards. It could therefore, be stated that socio-economic status was influential variable incase of knowledge and decline in area under ber orchards.

4.5 Patil Nanagouda and A.H. Rajasab, 2012.Constraints Experienced by Onion Growers from Gulbarga District of Karnataka, India.*Int. J. Ext. Educ.* **VIII : 48-50.**

Afield survey was carried out to study the constraints experienced by the onion growers from Gulbarga District of Karnataka during 2008-2011. The primary data was collected through personal survey of farmers from seven villages covering three taluks. The survey revealed that onion growing area and onion growers are increasing in Gulbarga district, but onion growers are facing many

constraints like poor quality seeds, high cost of branded seeds, costly seedlings, shortage and costly labourers, shortage of water, erratic load shedding, heavy weed infestation, costly manures, no idea of fertilizers and chemicals, their dosages and time of application, lack of knowledge of diseases, pests and their control measures, low yield, poor storage facilities and negligible market information. Awareness, training programs and active participation of horticultural department are needed to overcome these constraints.

4.6 Ujjwal Kumar and K.M. Singh, 2013. Constraints in On-Farm Water Management.*Int. J. Ext. Educ.* IX : 37-42.

The study was conducted in canal operated area of Patna and tube wall operated area of Vaishali District of Bihar to find tire constraints of water management in crop production. Total 120 and 100 farmers were selected from canal and tube well area respectively. Twelve constraints of water management were identified for the study. Based on total score obtained ranking of each constraint was done to know the severity of the constraints. Kendall's coefficient of concordance was used to study the degree of association among three (head, middle and tail reaches of canal command) or more sets of rankings. Spearman's rank correlation coefficient (r) was used to measure correlation between two sets of ranks. In tubewell command area, 65 per cent people have own functional tubewells, whereas only 43 per cent people in canal command owned functional tubewells out of that 57.7 per cent tubewells are in tail reaches of canal. The study revealed that costly irrigation, uneven plots, lack of irrigation implements are major water management constraints in tubewell commands; whereas uneven bunds, scattered plots, problems due to neighboring plots are top three water management constraints in canal commands

4.7 Rathod M.K. and A.S. Pawar, 2014. Study of Socio-economic Condition of Deceased Farmers and Post Suicide Consequenes over their Families. *Int. J. Ext. Educ.* X : 93-98.

Recently farmer's suicides have been receiving attention of public media, researchers and policy maker's in Vidarbha region of Maharashtra State. In Vidarbha there are six crises districts. Wardha is one of the core districts hence the present study was framed to know the socio-economic and situational factors leading to suicidal death by the farmers and the consequences faced by household of suicide farmers after suicide. Annual income of majority or respondents (31.00%) was only rupees fifty thousand and about 18 per cent were below poverty line. Socio-economic status of deceased farmers was medium (31.00%) followed by low (28.00%) to very low (23.00%) Indebtedness of the respondents was found highly significant but negatively correlated with SES. Financial crisis and pressure of repayment of loan were the major consequence faced by the deceased farmers families.

4.8 Balarubini M. and C. Karthiekeyan, 2016. A Comprehensive Study on Damage Caused by Thane Storm as Experienced by the Cashew Growers in Cuddalore District of Tamil Nadu. *Int. J. Ext. Educ.* XII : 103-108.

"Thane" was a cyclone with severe intensity was developed in the Bay of Bengal during the last week of December 2011. The nature and extent of damage occurred to the cashew farmers would be a new approach in data base creation attempted in this study. The study was conducted in Panruti block of Cuddalore district with sample size of 194 Thane affected cashew growers and the study analyses nature and extent of damage due to Thane cyclone. The respondents were interviewed personally by a well structured interview schedule. The regression was worked out. The damage due to Thane in the cashew fields in the increasing order was crop damage followed by soil damage, fencing damage and damage of bunds. The damage for water and livestock was negligible.

4.9 Samuel E. Esheya, C. U. Okoye, N. J. Nweze, 2017. Socio-Economic Effects of Chemical Pollution on Agricultural production in Mineral Mining

Communities of South- East Nigeria. ***Int. J. Ext. Educ.*** **XII : 1-6.**

This study investigated the socio-economic effects of chemical pollution on agricultural production in mineral mining communities of South-East Nigeria. It was carried out in three (3) states namely: Abia, Ebonyi and Imo states. The study was guided by three research questions and one null hypothesis. Multi-state and purposive simple random sampling techniques were employed for selecting the respondents. Data were obtained from primary sources from a sample of 400 respondents by the use of structured questionnaire. Data collected were analysed using percentage, frequency mean and multiple regression analysis. Results indicate that explosive, sulphuric acid pesticides, persistent organic pollutants, acetylene, nitric acid, radioactive chemicals, fumigants and volatile organic compounds death of soil micro-organisms reduction in farmland and soil fertility, poor growth and pre-mature death of crops: poor crop yield and frequent outbreak of civil crises were among the severe socio-economic effects of chemical pollution in mineral mining communities of South-East Nigeria. Based on the results of the multiple regression analysis, the yield of yam, cassava and rice respectively. This study recommends that it would be necessary to improve the socio-economic status of the farmers and strengthen cooperation between various parties to solve chemical pollution and related problems facing the mineral mining host communities to achieve the twin goals of food security and environmental safety in mineral mining host communities of South-East Nigeria.

4.10 Wasnik S.M., 2013. Study on Antecedents of Cotton Grower's Alienation from Land in Distress Vidarbha Region of Maharashtra.*Int. J. Ext. Educ.* IX : 56-60.

The data gathered from 600 farmers from distress and non-distress districts under Technology Mission on Cotton. Mini Mission I project in Vidarbha region of Maharashtra was analysesd for farmer's alienation from land. The study indicated that cotton farmers in the region in both distress and non distress are having higher level of alienation from land Alienation arises because of high degree of powerlessness meaninglessness, isolation and self estrangement exists among cotton growers farmers perception of no guaranteed remunerative price of the produce, vicious circle of uncertain rains and drought repeated cotton crop failures leading to poor economy, non-availability of capital/credit, no economic support from friends/ relatives during crisis, leading to a stressful life due to feeling of isolation from family fellow farmers and community. Cotton grower's perception that their work as a farmer is not rewarded was among reasons quoted by majority respondent farmers for distress. The increase in alienation levels among the farmers is due to agrarian distress and agrarian distress is the result of agrarian crisis, which cannot be solved only with fire fighting techniques.

5. Communication

5.1 Rajput H. D., C. P. Girase, and L. B. Kalantri, 2008. Factors Associated with Declining Chill Area and its Diversification. ***Int. J. Ext. Educ.*** **IV : 60-64.**

A study on factors associated with declining chilli area and its diversification was conducted in Kuhi tahsil of Nagpur district of Maharashtra state. It was observed that the per cent change in area under chilli was 67.16 and majority of the respondents had medium crop diversification from chilli to other crops. Findings regarding factors associated with decline in chilli area reveled that lowering water table, unavailability of labourers, lack of knowledge about plant protection high cost of insecticide and fertilizer, high cost of seeds of improved varieties and low market price for chillies were the important factors.

5.2 Jyothi V. and B Vijayabhinandana 2010. Information and Communication Technology Utilisation Pattern by the Teaching Staff of Acharya N. G. Ranga Agricultural University. ***Int. J. Ext. Educ.*** **VI : 69-73**

An exploratory study was conducted taking computer and internet applications of Information and Communication Technology (ICT). A total of 60 teachers were sampled for the study. 96.67 per cent of the teachers had e-mail addresses, little more than half of them used computers in college (51.67%) a little more than two third used google (68.33%) search engines, nearly two third used compact discs (61.67%) to store the data typed in computer or that collected from internet, three fourth used Microsoft word for preparing official reports two third of them used power point slides to present seminars, Microsoft excel was used by more that half of the respondents to calculate the grade point of the students (55.00%) E-mail was primarily used by most of the respondents to exchange personal information (98.33%) WWW was used to get latest and detailed information on the topic (83.33%) More than half of the respondents expressed satisfaction and very much satisfaction with theICT facilities provided by the university.

5.3 Thakur A. K., 2009. Role of Communication in the Effectiveness of Dairy Organization. ***Int. J. Ext. Educ.*** **V : 73-77.**

All development organizations have communication as an inseparable and vital component because communication in the organization and organizational effectiveness are intimately related to each other. The findings of study reveled that the extent of vertical communication was more than that of horizontal communication in both the organizations viz, Pradeshik Co-operative Dairy Federation (PCDF) and State Milk Board (SMB). In vertical communication, the amount of downward communication was higher than that of upward communication at all levels in both the organizations; however, the upward communication had positive and significant relationship with the organizational effectiveness. As far as channels of communication are concerned, visual channels and audio-visual channels were found to be positively and highly significantly correlated with the organizational effectiveness.

5.4 Chapke Rajendra and Rekha Bhagat, 2009. Traditional Media for Rural Mass Communication. ***Int. J. Ext. Educ.*** **V : 65-72.**

Results of the study revealed that majority of respondents were visitors of Tamasha (71.66%) and Bhajan (60.00%) at their village itself especially on the Diwali occasion. These were organized by the village people interested in the traditional media shows. The folk media were most liked by the viewers due to lively performance and its story based on the current topic (40.50%). First preference was given by viewers to social development themes including agriculture (522 total score), followed by patriotic songs (501 total score) recreation and entertainment (363 total score), political (overall score 177) and history of freedom fighters and religious. The purpose served by show were; good impact of message realized (71.67%) felt entertained (55.66%) and developed 'we' felling (36.67%). The traditional media shows are still total involvement shows providing entertainment and education to the rural masses.

5.5 Patil S. S., M. S. Singh, and P. B. Kharde, 2010. Antecedents and Relative Contribution of Predicting Factors in Communication Behavior of IMP Facilitators. ***Int. J. Ext. Educ.*** **VI : 15-22.**

The Farmer Field School (FFS) approach is based on adult education principle and usually knowledge intensive, season-long program where farmers meet weekly to learn and experiment on a given topic. The first Field Schools were established in 1989 in Central Java during the pilot phase of the FAO assisted National IMP Program. After its success in South- East Asia, this approach spread to other parts of Asia, Central America and Africa.In the FFS model, the facilitator plays strategic role in educating, motivating and enhancing decision-making capacity of the participant farmers. This paper aims to examine the profile of facilitators and its relative contribution in communication behavior

based on the investigation conducted in the Vidarbha region of Maharashtra State in India. The study indicated 'high' communication behavior of facilitators for integrated pest management of cotton. The characteristics such as training received, infrastructure facilities, attitude, job satisfaction, job commitment, scientific orientation, IMP knowledge, information input behavior, information evaluation behavior, information preservation, behavior, information output behavior and feedback made a positive and significant influence on communication behavior of facilitators. All the independent variables jointly explained 92.82% of relative contribution in communication behavior of facilitators. By considering the effectiveness of FFS approach in agricultural communication, the study recommend that FFS model must be expanded and sustained to encourage farmer led extension, change behavioral domain viz., knowledge, skill and attitude of the farmers, and enhance their knowledge management, experience sharing and problem solving capacity in localized agro-ecological situation.

5.6 Chukwudumebi L. Egbule and Agwu E. Agwu, 2013. Constraints in Use of Mobile Phones for Information Dissemination by Public Extension Agents in Delta State, Nigeria. ***Int. J. Ext. Educ.*** **IX : 19-23.**

Mobile phones possess the capacity to rework ways extension workers and farmers interact. This paper identified the constraints that limit dissemination of agricultural information using the mobile phone by public extension agents in Delta state, Nigeria. Data for the study were collected from 64 randomly selected public extension agents in the three agricultural zones of the state. Majority (71.9%) of the respondents had OND/NCE as their highest educational qualification with an average working experience of about 17 years. Mobile phones were adequate in meeting farmers information needs on availability of new crop varieties and sale of crop produce (M= 2.0) However, factor such as non availability of institutional mobile phone (M = 2.81) high call tariff and fluctuating services (M = 2.3) and lack of supportive government policies (M= 2.57) were identified as major constraints to use of mobile phones for information dissemination by public extension agents. The study concludes that the public extension agent in Delta state are burdened by these constraints in the course of discharging their duties and recommends the need for provision on institutional mobile phones to extension agents and official hotlines so as to reduce the drudgery associated with the current high farmer to extension agent ratio facing the extension delivery services in the state.

5.7 Shanthinichandra, Karthikeyan and Mohanraj, 2013. Farmer's Willingness toPay (WTP) Behaviour for ICT Based Extension Approach. ***Int. J. Ext. Educ.*** **IX : 24-31.**

The study was undertaken to analyse farmer's behaviour of willingness to pay for agricultural extension service through e-Velanmai in India. Proportionate random sampling procedure was adopted to select a sample of 120 farmers who availed e-Velanmai mode of extension. Results showed that no farmer was willing to pay annually for accessing the extension services offered by the state department of agriculture but majority of the farmers (91.67%) were willing to pay to access extension services through e-Velanmai. The significant attributes that have contributed to the farmer's behavior of willingness to pay for e-Velanmai model of agricultural extension were age, education level, farm size and income.

5.8 Slathia P. S., Narinder Paul and M. S. Nain, 2011. Awareness among farming Community Regarding Kissan Call Centres in Jammu Region. ***Int. J. Ext. Educ.*** **VII : 41-46.**

The present investigation was carried out in the two purposively selected panchayats of the District Samba of Jammu and Kashmir with the objectives to study the level of awareness among the farmers regarding the Kissan Call Centres besides

finding out their opinion towards Kissan call Centres. The study sample consisted of 30 each farmers, farm youth and farm women selected at random from the two panchayats of the Samba District of Jammu Division of Jammu and Kashmir thereby constituting a sample 90o respondents. Data from the villages were collected on a well and comprehensively designed schedule. The dings of the study reveal that the farmers had poor level of awareness regarding the Kissan Call Centres. 76 recent of the farmers had no knowledge of the Centres as well as the toll free phone number. However, 24 percent of the farmers knew the concept of KCC as well as the toll free phone number. Among the different categories of the respondents, farm youth had more awareness whereas farm women lagged behind in terms of the awareness regarding the Kissan Call Centres. All the categories of the respondents including the farm women showed a most favourable opinion towards the Kissan Call Centres and urged upon creating more awareness among the ruralites.

5.9 Nikulsinh M. Chauhan, 2011. Prospects and Opinions of the Farmers from ICT in Agriculture at Village Level. ***Int. J. Ext. Educ.*** **VII : 29-35.**

Amongst the various means for information communication are available, satellite based internet communication found very efficient, accurate, quick and somewhat cheaper in the field of disseminating the information from research system to farmers. Internet communication has touched almost all the district in our country and is mainly down up to the village levels. Internet offers a means for bridging the gap between developmental professional, rural people and agricultural producers through the initiation of interaction and dialogue. Keeping all the views in mind it was decided to study the expectations and opinion of the farmers regarding internet facility with the following specific objectives. (1) To study the expectations and opinion of the farmers towards internet facility.(2) To ascertain the relationship between personal profile and opinion of the farmers towards internet facility.It can be concluded from the results that out of the 10 independent variables, flue variables like Education, Land holding, Contact with NRI's, Experience of internet use and Mass media exposure are significantly and positively correlated with the opinion of the farmers about the use of Internet for farming community. More than 70 per cent of the farmers opined that internet is the rich source and fastest way of exchanging information in short time. It must be used by the farming community for their betterment.

5.10 Deepika Verma and Gyanendra Sharma, 2017. Communication Network of Woman Vegetable Growers of Nainital District of Uttarakhand. ***Int. J. Ext. Educ.*** **XIII : 57-60.**

Exchange of information and its diffusion takes place within a social system and the roles of actors such as people and organizations affect the diffusion of the innovation process. A research was undertaken to delineate the communication network of women vegetable growers. The study was conducted in six villages of Community Development Blocks, Haldwani, Ranmagar and Dhari in Nainital district of Uttarakhand. Study was conducted during 2012-2014 and sociometry was applied to probe the key communicators in dissemination of vegetable related information. The respondents were asked from whom they seek advice or suggestion in matters related to vegetable cultivation. Their responses were noted and key communicators were identified and diagrammatical depicted using target sociogram technique. Communication stars of each village were identified from the sample respondents. Results of the study emphasis on capacity building programme for communication stars to promote vegetable cultivation.

5.11 Meena Bhagwan Singh and M. L. Meena, 2018. Role of Information and Communication Technology in Doubling Farm Income in Indian Sub Continent. ***Int. J. Ext. Educ.*** **XIV: 120-124.**

The e-agriculture approach for farm information generation, management and dissemination has been identified as key feature in seven point's strategy plan for implementation for doubling farm income by tile year 2022. Digital e-learning is helping the farming community in terms of decision making on crops, commodities, products and prices. These initiatives are increasing at faster rate thus making information, technology, solution, actions available to the farmers at the clicks on their smart phones. Technical content in the form of multimedia, videos and presentations available at law cost and accessible through various ICT platforms greatly benefit the farming community. On this background this study is based on the sharing experience of ICT use for agricultural knowledge management and dissemination to fanners. Under tile project application of various JCT based tools and platforms including social media include website, mobile apps. facebook, whatsapp, youtube, videoconferencing, SMS and mobile phone based help line. The mid review of The project activates showed encouraging results from the beneficiaries farmers.The study found that digital agriculture proved to be useful for technological empowerment of the farmers. It has reduced the dissemination cost of farm information and also reduces number of players in supply chain management. ICT based application also enhanced efficiency of the extension officials and reduced duplicacy of beneficiaries of schemes.

5.12 Senthiklumar S., C. Manivannan and S. Suresh Kannan, 2018. Utilization Pattern on Use of Mobile Phones among Small Ruminants Farmers in Tirunelveli District. ***Int. J. Ext. Educ.*** **XIV: 84-88.**

The mobile phone has emerged as one of tile widely accepted and adopted ICT too/to deliver tile information in agriculture, livestock and allied sectors. Though mobile phone in tire livestock sector is considered as an emerging tool, there is a need to study the utilisation pattern on use of mobile phone among the farmers who were engaged in animal husbandry enterprises. Accordingly, 60 sheep and 60 goat farmers were selected randomly in Tirunelveli District of Tamil Nadu that constituted a sample size of 120 for this study. The primary data were collected from tire selected respondents by using well structured pre-tested interview schedule. The study revealed that, majority of the respondents (77.50 per cent) owned mobile phones and only 22.50 percent did not have mobile phones. About 28.33 per cent of respondents used tire mobile phones for contact with extension personnel to get livestock related information. As regard to credibility of information received through mobile phone, 40.83 per cent trust tile information to a great extent whereas 40.00 per cent of the respondents reported to trust it to some extent. About 50.00 per cent of tire respondents faced signal problem while using mobile phone and 28.33 per cent faced other constraints such as language and voice problem. The study concluded that almost all tire respondents were using mobile phones regularly for retrieving information on animal husbandry related information depending on their needs. Hence, it is recommended to develop mobile application software in small ruminants as decision support system to cater to the information needs of farmers.

6. Extension Education Research

6.1 Lukngam Yomgam and V. S. Tekale, 2014. Aspiration of Girl Students of College of Agriculture, Nagpur. ***Int. J. Ext. Educ.*** **X : 141-143.**

This research study was undertaken at College of Agriculture, Nagpur of Vidharbha region of Maharashtra State. The exploratory design of social research was used. In case of educational aspiration of under graduate and post graduate girl students, majority of the respondents (56.00%) were mostly interested to do post graduation and doctoral degree, respectively. In case of agricultural aspiration 39.00 per cent respondents were mostly interested to become an innovative and progressive farmer followed by promote Agro Service Centre

(32.00%) and to start nursery farming as business (30.00%) respectively. In case of career aspiration of girl students equal per cent of the respondents (45.00%) were most interested in getting job at nationalized bank and administrative position in public sector. In case of economic aspiration of girl students half of the respondents (50.00%) were mostly interested to earn Rs. 5,00,001 to 6,00,000per annum. The 72.00 per cent respondents had their social aspiration as to develop their own family. In case of general aspiration of girl students about 68.00 per cent of respondents were most interested to become ideal wife. The majority of respondents (71.00%) had overall medium level aspiration. The variable CGPA, caste, category, fathers education, mother's education father's occupation and achievement motivation shows positive and significant relationship with aspiration level ofgirl students.

7. Food Security/Livelihood Security

7.1 Kumbhare N. V., R. N. Padaria and V. K. Chaturvedi, 2011. Household Food Security under Changing Agricultural Scenario. *Int. J. Ext. Educ.* VII : 61-66.

In the present study, an attempt has been made to assess the impact of changing agricultural and socio-economic environment on household food security. The study was conducted in two states namely Haryana and Bihar during 2004-2009. A stratified random selection technique was followed to select the villages and respondents. Thirty households each from Hissar and Jind districts of Haryana, and Samastipur and Mazaffarpur districts of Bihar were selected, thus making the sample size of 240 PRA techniques and interview schedule based field survey were employed for data collection. The study has identified agro socio-economic factors affecting the agricultural productivity and household food security. The factors perceived by the respondents about impact of socio-economic environment on household food security, the top ranking dimensions were socio-cultural changes in rural society/ influence of urban lifestyles (84.37%) followed by preference for non farm occupations/ employments among rural youth (81.25%) and emphasis on spending on luxurious and comfortable life styles (78.56%). The analysis of the identified parameters indicated that a large majority of rural households (70.83%) perceived that household food security was directly correlated with ability to generate sufficient income. The study revealed a discouraging trend about the extent of affordability of nutritious food among farm families which was moderate for about two third majority of the surveyed sample. The farm families especially women and children were affected to a great extent to the incidence of nutritional deficiency diseases, more particularly anaemia. The study highlighted that a substantial expenditure was incurred on non-food necessities like clothing, housing, education, health, social obligations like marriages and other socio-cultural activities. The rural households lacked orientation towards savings from their income.

7.2 Dhanasree K. and B. Vijayabhinandana, 2013. Livelihood Security of Tribal Women in High Altitude and Tribal Zone of Andhra Pradesh. *Int. J. Ext. Educ.* IX : 47-50.

A study was conducted to examine the livelihood systems & livelihood security of tribal women in high altitude and tribal zone of Andhra Pradesh. Most of the households earn a living by maintaining a diversified livelihood patterns viz., farming, forest based activities, wage employment, migration, petty business with a very low annual income. Majority (42.22%) of the respondents were involved in Agriculture +Forest based activities + wage earners followed by (27.22%) were involved in Agriculture alone (15.00%) were involved in Agriculture +wage earners+Animal husbandry (8.88%) were involved in forest based activities + wage earners (6.66%) were involved in Agriculture +petty business. 57.77% of the households in the study are having better livelihood security while

(35.00%) had poor livelihood security and (12.23%) of the households and rich livelihood security. Apart from forming women in the study are engaged in collection of forest products namely, honey, fuel wood, leaves, Amla fruits, Tamarind, Marking nuts, etc. Tribes in the study area uses the forests as sources of firewood, housing materials, medical herbs, water and irrigation grazing their cattle, hunting & charcoal making. The empowerment of tribal women and development of tribal women and sensitization of research and extension systems about their roles and contributions are important for sustainable growth and management of livelihood security. A strategy in this study was conceived as a plan of action in order to empower the tribal women and sensitize the development agencies for greater contribution for ensuring livelihood security.

7.3 Karuna M. V., Jeba Mary and C. Karthikeyan, 2013. Assessment of Livelihood Security of SHG Women Entrepreneurs in Tank System. ***Int. J. Ext. Educ.*** **IX : 15-18.**

This study was conducted in Periyakulam, Andipatti and Bodinayakkanur blocks ofTheni district in Tamil Nadu. From each block, two SHGs were selected based on the contributions of tank to livelihood security. From these six SHGs, all the 102 members were considered as the respondents for the study. The respondents were interviewed personally by a well structured interview schedule. Data were collected through focus group discussion method. The data were analyzed using livelihood security index. The salient findings of the study are, majority of rural women had medium level of social security and financial security and had medium livelihood security index (LSI) value. This reflected the imbalanced development of the society and highlights the need to take effective steps to improve the livelihood security by focusing an the grey areas.

7.4 Kumbhare N. V., B. S. Hansra, L. B. Kalantri and R. N. Padaria, 2014. Household Food Security in Vidarbha Region of Maharashtra, India. ***Int. J. Ext. Educ.*** **X : 168-175.**

In the recent years, household food security has been a matter of concern due to rising prices of food and non-food items. The present study examines the household food security in two selected districts, that is, Bhandara and Chandrapur in Vidarbha region of Maharashtra, India. Two blocks each from Bhandara (Sakoli and Pauni) and Chandrapur (Bhadravati and Warora) districts were selected randomly. Furthermore, two villages from each block were selected randomly. Twenty five (25) respondents were selected randomly from each of the sampled eight villages. Thus, a total of200 respondents from two districts constituted the sample for the study. The assessment of household food security status revealed that 59per cent had low household food security, followed by very low (20.00%) and medium (16.50%) level of household food security. The study further revealed that variables such as size of land holding, annual income, social participation, adoption of modern agricultural technology, food availability and food quality had positive and significant influence on food security of the rural households. Annual income and food quality were found to have highly significant ($p<0.01$) influence on households food security.

7.5 Senthilkumar T. and V. Muralidhar, 2016. Contribution of Meat towards Nutritional Security an Analysis through Consumption of Different Food Items among Meat and Non-Meat Consumers in Karnataka. ***Int. J. Ext. Educ.*** **XII : 113-116.**

Human diet and nutritional status have undergone a sequence of major shifts, stated as the nutrition transition. The present study was conducted to explore the contribution of meat towards nutritional security among rural, semi-urban and urban households in Karnataka with the sample size of 90 meat rating respondents and 30 non-meat rating respondents. Conventional analyses like mean and percentages were used for the present study. Apart from these analyses, the calorie and protein intake based on the respondents

intake of food items of plant sources, non-meat animal source and meat animal sources was worked out and discussed. As a whole, calorie and protein intake per consumption unit per day was found high in urban area followed by semi-urban area and awareness on calorie and protein intake among rural area in Karnataka was proposed.

7.6 Shweta Biradar and Shashikumar. S., 2018. Impact of Entrepreneurship Development on Homemade Cocoa Chocolates among Rural Youths for Livelihood Security. *Int. J. Ext. Educ.* XIV: 89-93.

The present study was a quasi experimental research design aimed to study Impact of Entrepreneurship Development on Homemade Cocoa Chocolates among rural youths for Livelihood Security. For purpose, a sample of150 youths aged between 20 to 35years was selected from Sirsi and Siddapur talukas of Uttar Kannada district. The pre test and post test was conducted to know the knowledge level regarding homemade cocoa chocolates usingpre tested structured questionnaire.

Analyses of the results revealed that there was significant difference between pretest and post test on entrepreneurial activity, product development component, storage and packaging component along with marketing knowledge and skill of the respondents on homemade cocoa chocolates. There was high gain in knowledge and skill of the respondents on homemade cocoa chocolates from 1.30 per cent to 86.60 per cent to 91.30 percent indicating high impact of training. The knowledge and skill of the respondents on homemade cocoa chocolates increased considerably in entrepreneurial activity, product development component, storage, packaging and marketing.

8. Forming Systems

8.1 Indu Grover and Nishi Sethi, 2008. Work and Wage differentials in Farming Systems of Haryana : An Analysis using Gender as an Analytical Tool. *Int. J. Ext. Educ.* IV : 71-78.

Gender used as an analytical tool brings to light the comparison in three farming systems in Haryana viz. wheat-cotton, vegetable and dairy respect to profile, daily time spent in different operations in productive and reproductive activities, involvement by gender in various activities in the farming systems and wage differentials. The gender discrimination is evident in various operations women farmers performing more work, receiving fewer wages where this is paid, undertaking more activities and getting less time for rest and entertainment compared to their counterparts.

8.2 Kavita Deshmukh and M. K. Rathod, 2015. Impact of Climate Change on Developmental Parameters of Farmers. *Int. J. Ext. Educ.* XI : 66-69.

The present study was conducted during 2012-13 in Nagpur district of Vidarbha region in Maharashtra State. The sample consisted of 120 farmers from 10 different Villages of the district. The respondents were randomly selected and personally contacted to collect the data regarding environmental factors and developmental parameters of the farmers to access the impact of climate change on five major crops of Nagpur district viz. citrus, cotton, soybean, wheat and gram. It was observed that production and productivity of all five crops were decreased in last ten years as an effect of climate change. Cropping intensity showed declination from 156.94 to 129.28 per cent over a period of time. Cropping pattern was also substantially changed, area under orange and cotton were shifted tonon-cereals i.e. oilseed crops. Remarkable decrease was recorded in the number of live stock possessed by farmers. Milch animals and farm animals were lower down by 61.25per cent and 46.84percent, respectively.

8.3 Helen S. and B. Shanmugasundaram, 2015. Family Farming Pattern among the Households of Progressive Farmers in

Central Kerala. ***Int. J. Ext. Educ.*** **XI : 62-65.**

A study was conducted among the progressive farmers of Thrussur District of Central Kerala to analyse the existing pattern of family farming practices among the households of selected progressive farmers. It was noted that only negligible per cent of younger generation was fully depending on farming as primary occupation. Majority of the senior citizens were found to be engaged in farming activities and younger generation was engaged in off-farm activities. Most of the families were headed by males (95%) and they fully participated in farming activities. A little more than one-fourth of the farm women (30%) reported that they fully participated and half the percentage of the farm women (50%) partially participated in farming activities. A little more than one-third of the children (37%) expressed that they partially participated in farming activities. There is a scope for creating interest among the children (37%) towards farming who were partially engaged in farming activities. It could be concluded that majority of the progressive farmers (77%) utilized family labour at the maximum extent possible even though majority of the adult family members were found to be engaged in off-farm activities.

8.4 Paul Narinder, P. S. Siathia and Rakesh Kumar, 2017. PSRS-Model Based Farming System Analysis for Devising Strategically Accepted Options in Mitigating System Based Technologies Tribulations. ***Int. J. Ext. Educ.*** **XIII : 17-23.**

The present investigation was conducted, in purposively selected Dug village of District Samba of Jammu Division of Jammu and Kashmir found out the existing farming system of the village identify the major constraints in the adoption of the recommended practices of the different crops / enterprises and reasons for the non-adoption of the major technological interventions. It also helped to identify the major gaps and identifying system based technological option for overcoming the identified problems. The study looked into the farming systems being practiced by the farmers, their crop combinations, socio-economic characteristics of the farmers, economics of the different faring systems including the cost benefit ratio and development of a model for agriculture development plan based on prevailing reasons. Findings revealed that the agriculture and agriculture + Livestock were the two major prevalent farming system in the study area. Resource categorization of the farming household revealed that majority of the farm households i.e. 86.46 percent belonged to the resource poor category whereas, only 13.54 percent of them were reported to be resource rich. Paddy crop has been found to be the most prominent crop in the agriculture as well as agriculture + livestock farming systems. The annual income of the farmers under agriculture + animal husbandry farming system under both the resource categories i.e. resource poor and resource rich has been found to be much higher than the farmers undertaking only agriculture farming system thereby confirming that diversified farming system could increase the annual income the farmers. The major problems as identified were low yield in paddy due to blast and other disease and pests, poor cop management practices, cultivation of inappropriate, local and low yielding varieties, imbalanced use of fertilizers, shortage/non availability of labour for farm operations, poor breeding practices in cattle, poor health of animals due to pests and diseases and shortage of fodder for the animals during winter season.

8.5 Patel A. M. and Ashok A. Patel, 2018. Sustainability of Farm and Farmers through Eco-friendly Integrated Farming System Approach. ***Int. J. Ext. Educ.*** **XIV : 08-12.**

The field experiment has been conducted to study the performance of integrated forming system (IFS) approach over conventional method of farming. The 1.0 ha IFS is based on in vogue cropping system on 0.70 ha viz. (i) green gram - castor relay (0.32 ha), (ii) groundnut- wheat-fodder

pearl millet (0.08 ha), (iii) green grant - mustard-summer pearl millet (024 ha) and (iv) fodder cowpea -lucere + chicory (0.06 ha) to ensure annual calories and nutritional requirements of family. The income and health were made more sustainable by growing fruits and vegetables in two tiers on 0.25 ha. The soil health was taken care by including pulses in cropping systems, making microbial enriched vermicompost from the waste and dung of the two buffaloes reared on 0.035 ha. Farm wastes were recycled within the system which obliterated the need to purchase off-farm inputs. The internal bunds were planted with fodder crops (Dhaman and Napier grass) and timber trees (Teak, drum stick, subabul etc.), while on boundaries quick growing timber trees like Ailanthus, bamboo, drum stick and Eucalyptus were planted to brace up income. The model has a provision of farm pond (0.015 ha) for water harvesting and water recharging on low lying depression of the form. The system has been functional for the last seven years und the cursory analysis of the investment indicated that the system is good enough to provide average income of Rs. 617/day with average engagement of 0.93 labour-day/day. The continuous sustainable income and livelihood security throughout the year can be fruitful to check urban migration.

8.6 Timilsina, R. H., 2019. Agricultural Land Use Change in Nepal. ***Int. J. Ext. Educ.*** **XV : 127-131.**

This study reviews the agricultural land use pattern of Nepal based on secondary data. The recent trend showed that among the major three crops, maize, paddy, and wheat; production area of wheat is decreasing. Similarly, among major three livestock-cattle, buffalo and goat; the number of goats has been increased. Grassland declined in hill and mountain posed a problem to livestock farming. The annual rate of increase in crop land is 0.37 percent in the high mountain proved encroachment on biodiversity. Poor land management practices have significantly affected soil quality and crop production. The most pronounced land use change in the Terai region between 1989 and 2016 were the rapid increase in urban built up. Multiple factors like migration, real-estate business, fragmentation of land, and an increase in land use in off farm activities were found responsible for the decrease in crop area and livestock production.

9. Human Resource Development

9.1 Patil G. B., S. D. Suryawanshi and D. P. Waskar, 2007. A Study on Knowledge of Extension Workers of Pomegranate Production Technology. ***Int. J. Ext. Educ.*** **III : 45-51.**

The extension worker is responsible for dissemination of technical knowledge regarding production technology of pomegranate for its adoption by farmers. It is, therefore, important to study the knowledge of extension workers in this regard. The study observed that among the agro-techniques of the crop, the knowledge of varieties and plant propagation was satisfactory. However, highly technical knowledge such as micro-propagation, water requirement, CPE ratios, etc. were either not known or partially known to extension workers. The knowledge of post sowing management was known to many extension workers. However, the knowledge of crop regulations needed more emphasis. Although important activities of post-harvest were known to a majority of extension workers, the details of preparation and processing needs to be improved. The knowledge of identification of pests and diseases was known to a majority but the details of insecticide and fungicide and their concentration was not fully known to them. The technical and scientific knowledge of extension workers was higher case of those who possessed higher qualification in the subject of horticulture.

9.2 Shabanali Fami H., N. Fallah Haghighi and A. Asadi, 2007. An Analysis of the Knowledge of Agricultural Extension Agents on Information and Communication Technologies in the Gilan Province of Iran. ***Int. J. Ext. Educ.*** **III : 36-44.**

Agricultural extension is one of the important institutions in the Iranian agricultural system which seeks new technologies and methodologies to improve its effectiveness. For this reason, a study was conducted to analyze knowledge of extension agents. In the study, ICTs refer to computer and internet. The statistical population of the study consisted of 472 extension agents working in Gilan province of Iran. Out of this, 203 agents were selected as sample through stratified random sampling technique. The data were collected by a questionnaire developed for the study. The validity of the assessment tool was proved by a panel of expert judgement. The main scales of the questionnaire were reliable as indicated by Cronbach Alpha coefficients ranging from 0.80 to 0.96. A Regression analysis indicated that three variables viz. knowledge about internet, skill on using internet services and working experience in non-extension organizational affairs determined 84.5 percent of variation of extension agents knowledge on ICTs.

9.3 Wankahade P. P., R. S. Bhople and V. S. Tekale, 2007. Role Performance of Agricultural Assistants in Farm Technology Transfer. ***Int. J. Ext. Educ.*** **III :11-17.**

The study revealed that the Agricultural Assistants (AAs) themselves and their supervisors expressed medium level of role performance of the AAs. The areawise role performance mean indices and ranking by AAs and supervisors indicated low level of role performance of AAs with regard to technical and input supply and quality control roles. Therefore, the AAs need to be inspired and motivated by their superiors for effective functioning. The education and in-service training as well as the psychological characteristics were found to be significantly related with the role performance of AAs, whereas results of step-down regression analysis indicated that role perception, achievement motivation, job commitment and attitude towards One Window Approach of farm technology transfer had contributed significantly in the variation of role performance of AAs. The role performance of the AA is hence the function of their role perception, achievement motivation, job commitment and attitude towards One Window Approach of farm technology transfer and need to be given due attention for improving their role performance.

9.4 Meenambigal J. and R. Netaji Seetharaman, 2009. Human Resource Development Needs of Agricultural Extension Personnel. ***Int. J. Ext. Educ.*** **V: 90-97.**

The study was conducted in Coimbatore and Madurai districts of Tamil Nadu, during the year 2000. The findings of the present study indicates the HRD needs of extension personnel. The ADOs, AOs (TANWA) and ADs (SMS) had medium level of training needs and the AOs (Extension) had high level of training need both on knowledge and skill aspects. Further, it was found that all the four categories of extension personnel have preferred to attend training inthe areas viz., RRA, PRA, SWOT analysis, Organizing and conducting on campus training, peripatetic training, crop estimation survey experiments, farmers day and exhibitions, evaluation of campaigns, exhibitions, demonstrations, presenting programmes through radio, television, preparation of video programmes and audio-visualaids, documentation of ITKS, organizing satellite farms, diversified farming, manpower planning, use of computers in job management, decision making process and time management.

9.5 Dabirian S., A. Rezvanfar and A. Asadi, 2009. Determinants of Agricultural Extension Experts' individual productivity. ***Int. J. Ext. Educ.*** **V: 44-50.**

The main purpose of the study was to investigate the factors that affect agricultural extension experts' individual productivity. A survey of 88 Extension experts was conducted in Hamadan Province of Iran. Individual productivity was measured with a self-evaluation questionnaire. The

study found that a majority of the extension experts (65.9%) belonged to high level of individual productivity, followed by 28.4 and 5.7 per cent belonging to intermediate and low level of individual productivity, respectively. Regression results also indicated that the full model was moderately successful, explaining 41.6 per cent of the variance in the individual productivity. Two independent variables that accounted for the explained variances were job motivation and job satisfaction. Administration should conduct a periodic need assessment to determine the level of individual productivity of Extension experts and identify methods for increasing individual productivity based on these findings.

9.6 Darsana S., and V. Ravichandan, 2014. Group Dynamics among The Members of NABARD Farmers' Clubs. ***Int. J. Ext. Educ.*** **X : 156-158.**

The present study was conducted at Thrissur district of Kerala state to analyse the group dynamics among the members of farmers under National Bank for Agricultural and Rural Development (NABARD). Three clubs each from Kodakara and Ollukkara blocks were identified randomly and 120 members were selected through proportionate sampling method. Group role, group motivation, group leadership, group behaviour, group cohesiveness, group conflict and intergroup dynamics have been selected as group dynamics components. Group dynamics index for clubs was found to be 0.604. Components were subjected to principle component analysis and factor analysis. Determining factors of group dynamics were named as group stimulation factor, group sustainability factor and group variance factor.

9.7 R. Sendilkumar, Shyam Bhaskar N. C. and M. Israel Thomas, 2014. Green Army Wadakkanchery Block Labour Bank : A Servqual Analysis. ***Int. J. Ext. Educ.*** **X : 120-126.**

Kerala has unique agro ecological, socioeconomic and political features. Traditionally, Kerala has been an agricultural state. The state had 8.74 lakh ha under the paddy crop in 1970-71; this declined to 2.34 lakh ha in 2009-10 a drop of 73.23 percent Green Atmy Wadakkancherry Block Labour Bank (GAWBLB) is an institutional intervention come with an aim to rejuvenate paddy sector in the Wadakkanchery block of Thrissur district, Kerala and contributing to food security in the state. It provides agro machinery services such as preparation of mat nursery, transplantation and harvesting to the farmers in paddy cultivation. The study dealt with an objective to assess the service quality of GAWBLB. Primary and secondary data were used for the analysis; 30 members of GAWBLB and 60 farmers who availed services from the case firm were approached with well structured pre tested interview schedule. 10 dimensions of service quality were analyzed using the SERVQUAL model. The service quality Gap was obtained by the difference in their expectation and perception of the services availed. The Likert scale with 7 points continuum was used in the study for obtaining the perception level of the farmers. Majority of the farmers were satisfied with services of GAWBLB. However, few gaps have been identified in services quality dimensions. The highest gap was found in responsiveness dimension. The productivity of paddy cultivation in the study area had been increased (2.5 ta 4.5 tonnes per hectare) after availing the service GAWBLB. They were in the opinion that the case firm was always not able to reach their field at proper time and suggested that inclusion of additional trained manpower would caters the need. Some of the suggestions made on the light of findings to improve the service quality were that case firm could try diversification of agro services with all under one roof concept, transparent and implementable season wise participatory calendar for agricultural activities in the service area and a mobile service breakdown unit with the joint partnership of manufacturers of agro machinery to ensure timely undisrupted services in the field.

9.8 Sadangi B. N., H. K. Dash and Sabita Mishra,

2014. Involving Village level Para Extension Worker (VPEW) to Address Gender Issues in Extension – Experience from Action Research. ***Int. J. Ext. Educ.*** **X : 45-51.**

A project, entitled "Designing gender sensitive extension model and testing its efficiency" was implemented by Directorate Research on Women in Agriculture in action research mode by selecting two clusters (irrigated and rainfed) and involving a group of four young men and women each from a cluster. The workers were designated as Village level Para Extension Workers (VPEWs) who were trained by multi-disciplinary team of subject matter specialists and exposed to the contents for carrying out location and gender specific extension activities. The role and activities of VPEWs were finalized on the opinion of VPEWs and objectives of the project which were also monitored at suitable intervals. Studies on changes in the capacity of VPEWs, message delivery by women VPEWs and men VPEWs, perceived field level outcomes were undertaken by interviewing the VPEWs (8) and 120 farm men and women after completion of half of the project tenure. The VPEWs were found significantly empowered in four areas namely knowledge in farming, skills in location specific technology application, organizing group discussion and village meetings and solving problem of farmers and farmwomen. The message delivery was studied by comparing the men and women VPEWs on broad parameters like modus operandi, correctness and content coverage. The field level impact of the model was evaluated concurrently on 16 areas as perceived by men and women. It was found that significant changes had taken place in all the 16 selected aspects implying that there were significant positive impacts of the model on the gender covered by the project. The three most important changes (from –ve to +ve) perceived by farm men and women to have taken place in descending order were 'general awareness on scientific farming' (95.83%), 'demand for farm information and technology' (95%) and 'organisation of extension activities' (93.33%).

9.9 Foyez Ahmed Prodhan and Md. Saflul Islam Afrad, 2014. Barriers and Preparedness of Agricultural Extension Workers towards ICT Utilization in Gazipur District of Bangladesh. ***Int. J. Ext. Educ.*** **X : 1-9.**

The purpose of the present study was to determine the extent of perception on barriers and preparedness of agricultural extension workers towards JCT utilization in Gazipur district of Bangladesh. A sample of 90 respondents was selected from the district following the proportionate random sampling technique. Data were collected using a structured questionnaire. Perceived barriers of agricultural extension workers to JCT utilization were measured considering four dimensions viz. i) organizational barrier ii) personal barrier iii) technological barrier and iv) policy barrier. Preparedness of agricultural extension workers towards ICT utilization were measured considering four dimensions namely i) farmers preparedness ii) personal preparedness iii) infrastructure preparedness and iv) management preparedness. Very big majority of the respondents (87.8%) encountered high barriers while 88.9 per cent of them encountered medium preparedness towards ICT utilization. The organizational barrier to ICT utilization in agriculture was relatively higher than three other dimensions followed by personal barriers, technological and policy barriers. Management preparedness was relatively upper compare to other three dimensions. Infrastructure preparedness came next rank following personal preparedness and farmers' preparedness. Training exposures, innovativeness, job satisfaction, cosmo politeness, use of information sources and knowledge had negative significant relationship with their perceived barriers to ICT utilization. Conversely, training exposures, innovativeness, job satisfaction, cosmopoliteness, use of information sources and knowledge showed positive significant relationship with their perceived preparedness towards ICT utilization.

9.10 Swathi Lekshmi P.S., 2017. Inter-Sectoral Mobility : The Case of Migrant Labourers in the Secondary Sector of Marine Fisheries of Karnataka. ***Int. J. Ext. Educ.*** **XIII : 11-16.**

The marine fisheries sector represents a transition from a subsistence economy to a highly industrialized one. The employment potential of the secondary and territory sectors in marine fisheries has increased tremendously in the present scenario of globalization and liberalization. The present paper documents the case of migrant labourers from Tamilnadu who have been forced to migrate from an agrarian economy in to fisheries based economy in coastal Karnataka in order to support their livelihood, due to frequent droughts, crop failure and reduced wages faced by them as agricultural labourers in their native state. The study conducted in Mangalore fisheries harbor to the Dakshina Kannada district of Karnataka documents the socio-economic profile of the migrants, the peak, medium and lean seasons of fishing, the differential wage patterns among the men and women labourers, and the factors which discriminated the high and low levels of aspiration among the migrants. The Discriminant function analysis revealed that, variables namely age, education, family type and annual income had shown positive influence in differentiating the high from low levels of aspiration among migrant labourers. The results of the Wilcoxon-Mann-Whitney test showed that significant differences were found in between high and low levels of aspiration with respect to variables such as education status of the respondents, occupational experience and the level of awareness of developmental programmes.

10. Indigenous Technology knowledge

10.1 Farhood Golmohammadi, 2019. Studying Traditional Knowledge and Economic Importance of Ferula assa-foetida in the Rural Areas of South Khorasan Province – East of Iran. ***Int. J. Ext. Educ.*** **XV : 119-126.**

Traditional knowledge is employed to mean knowledge, innovations, practices of indigenous and local communities embodying traditional life-styles; the wisdom developed over many generations of holistic traditional scientific utilization of the lands, natural resources and environment. Traditional knowledge is valid and necessary, and awaits its currently relevant wider application for human benefit. Many people in Mediterranean region who consult with spiritual healers, homeopaths and herbalists are utilizing traditional therapies. Ferula assa-foetida L. (Apiaceae) is one of the most important among the thirty species of Ferula distributed in Iran.

10.2 Meena M. L. and Aishwarya Dudi 2019. Documentation of Traditional Veterinary Medicines Used by Camel Owners in Marwar Region of Rajasthan, India. ***Int. J. Ext. Educ.*** **XV : 102-111.**

Information was collected from 290 camel keepers in the arid zone to identify the technical details of camel management and to cross check data for relevance testing. A total of 156 practices were identified and scientific relevance values obtained for each. In the case of trypanosomiasis, impaction, overall feeding and breeding, the variation between traditional and scientific management practices was found to be significant ($P<0.01$), but for manage, the variation was not significant. Most single camel owners (58.79%) opted for modern veterinary drugs; owners of >5 camels (45.58%) preferred the traditional approaches, while owners of 2-5 camels (49.78%) believed in a mixed management system. The number of camels significantly ($P<0.01$) influenced these management practices. The study concluded that a balanced combination of traditional and scientific practices cope better with problems of camel management at grass-roots level, and practices having a high and medium scientific relevance value must be preserved before they are lost.

11. Impact Analysis

11.1 Mohanraj K. and C. Karthikeyan, 2012. Socio-economic Impact of Mahatma Gandhi National Rural Employment Guarantee Scheme on Beneficiaries : A Case Study in Coimbatore District of Tamil Nadu. *Int. J. Ext. Educ.* VIII : 77-82.

The present study conducted in the Coimbatore district of Tamil Nadu, has examined the socio-economic impact of MGNREGS on the rural poor who are mainly comprised of small and marginal farmers and agricultural labourers. The study is based on 120 respondents drawn by simple random sampling method from eight Gram Panchayats which had more MGNREGS beneficiaries selected fom two randomly selected blocks in the district. The profile of MGNNREGS beneficiaries revealed that all the respondents possessed job card, majority of beneficiaries were not members in Social Audit Committee, old aged, female, belonged to SC/ST category, married illiterates, had only MGNREGS as their source of occupation, landless, had low to medium level of annual income, lived in nuclear family, had upto 5 members in a family. Their social participation was found to be at moderate level. With regard t the impact of MGNREGS, majority of the beneficiaries expressed that increased expenditure on food items and dresses, increased income level, cleared debts, increased outside contact, sent their children to schools earned respect from village and family members, increased spending on children's education, purchased household appliances, facilitated more contact with Block Development Officer, reduced migration were the major impacts created through MGNREGS.

11.2 Ramalakshmi Devi S., P. V. Satya Gopal, V. Sailaja, S.V. Prasad, 2012. Impact of Sugarcane Production Technologies as Perceived by Sugarcane Farmers in Chittoor District of Andhra Pradesh. *Int. J. Ext. Educ. V*III : 9-18.

The research study was conducted to know the impact of sugarcane production technologies as perceived by the sugarcane farmers in Chittoor district of Andhra Pradesh. The study revealed that 57.50 per cent of the sugarcane farmers perceived the impact of sugarcane production technologies as medium followed by low (27.50%) and high (15.00%) impact of sugarcane production technologies. Based on impact percentage the technologies were ranked from 1 to 36. Among all the selected thirty six sugarcane production technologies optimum time of planting (90.93%) was ranked first in terms of highest impact percentage. Land preparation (90.00%) and Selection of planting material (86.20%) occupied second and third ranks. Varieties was ranked fourth (84.91%), followed by pre emergence weed management (82.78%), wrapping and propping (79.17%), chemical control for pests (78.52%), water management (77.50%), earthing up (74.91%), chemical control for diseases (72.22%), Zino-sulphate (72.04%), seed rate (67.69%), spacing (66.94%), fertilizer dosage (66.48%) occupied fifth, sixth, seventh, eighth, ninth, tenth, eleventh, twelfth, thirteenth and fourteenth ranks respectively. The other technologies occupied the next ranks as per the perception of sugarcane farmers. More than half (59.17%) of the respondents were with medium productivity followed by low (20.83%) and high (20.00%) productivity levels. In case of cost of cultivation majority (65.00%) of the sugarcane farmers incurring medium cost of cultivation followed by low (19.17%) and high (15.83%) cost of cultivation. Majority (68.33%) of the sugarcane farmers were getting medium net profit followed by high (19.17%) and low (12.50%) net profit. Actual net profit and actual productivity were positive and significantly related with perceived impact of sugarcane production technologies of the respondents. Actual cost of cultivation was negative and significantly related with perceived impact of sugarcane production technologies of the respondents.

11.3 Adhiguru P. and S. Vimala Devi, 2012. ICT in

Indian Agriculture : Learnings and A Way Ahead. ***Int. J. Ext. Educ. VIII*** **: 1-4.**

Market liberalization and globalization are putting pressure on farmers to adjust their production portfolio and production practices to the emerging trends in food consumerism in domestic as well as global markets, to compete in the market place, farmers need to diversity their production whilst improving the quality of the output. The demand for fast access to accurate information on crop choices, technology, inputs, production practices, services and markets is increasing at a rapid pace from farmers end. Application of ICT models in India, with a few initiatives from public and private sector has helped the farmers to obtain the required and accurate information. Its use has reduced the transaction cost for the farmer leading him to save money and time. In this light, taking up appropriate technology, institution and policy measures would lead to efficient management of ICT for maximizing its impact on agriculture.

11.4 Mankar D. M., P. P. Wankhade and Y. B. Shambharkar, 2013. Impact of National Horticulture Mission on its Beneficiaries. ***Int. J. Ext. Educ. IX*** **: 72-80.**

Findings revealed that about two third (65.83%) of the NHM beneficiaries had moderate knowledge about fruit crops selected for the district under the National Horticulture Mission. Nearly one half (49.17%) of the beneficiaries moderately favourable attitude towards the NHM. It was 50.69 per cent. There was change in employment days by 41.12 percent. Land use under horticulture crop was changed by 8750 percent.

11.5 Mankar D. M., P. P. Wankhade and N. M. Kale, 2014. Socio-economic Impact of Improved Soybean Technology on Farmers. ***Int. J. Ext. Educ.*** **X : 146-152.**

The present study findings revealed that nearly three fourth (71.00%) of the soybean growers had high adoption level followed by medium (29.00%) adoption level. Impact of soybean technology was measured in terms of change in yield which was 10.42 q/ha. before adoption of soybean technology. It was increased to 19.35 q/ha. after adoption of soybean technology. It was 85.70 per cent change in yield. There was change in income by 40.67 per cent. Land use under soybean crop was changed by 39.39 per cent, whereas one third (33.69%) change was noticed in case of family education. In case of annual spending pattern the change was (28.09%). In case of type of house the change was 19.32 per cent. Change in assets was noticed very less (10.84%). Less than 10.00 percent change was noticed, in case of cropping pattern (9.09%), in case of land utilization pattern (7.90%), in case of occupation (6.25%) and in case of employment the change was only 5.97 per cent. Overall impact change was 21.69 per cent.

11.6 Nikam Vinayak Ramesh, Premlata Singh, Shiv Kumar, K. Vijayaragavan, 2014. Determinants of Success of Mahagrapes as Perceived by Members. ***Int. J. Ext. Educ.*** **X : 111-114.**

Mahagrapes was established with the aim of increasing export of grapes and income of grape grower of Maharashtra. It has helped in linking small and marginal farmers from Maharashtra to international market. Many studies indicated Mahagrapes as a success story. Therefore study was conducted to know determinants of success of Mahagrapes as perceived by members of Mahagrapes. For the study Nashik, Sangli and Pune districts of Maharashtra were purposively selected and 30 members from each district were interviewed for data collection. It was found that members perceived provision of needed infrastructure like pre cooling, cooling and storage as most important determinants of success of Mahagrapes followed by 'small and marginal farmers linked to international market' and 'increase in global competitiveness of Indian grape growers.

11.7 Ramaraj, A. P., J. Kavitha Mary and K. Senthilraja, 2013. Farmers Perspectives on Impact of Climate Change on Cocoa Cultivation and Production in Pollachi

Region of Tamil Nadu, India. ***Int. J. Ext. Educ.*** **IX: 91-94.**

To analyze the present situation of cocoa plantations over Pollachi, Tamil Nadu, India and perception of farmers about the impact of climate change on cocoa cultivation, a survey based analysis was carried out. Data were collected from randomly selected farmers in Pollachi region. The climate of the study area favors the growth of cocoa. Cocoa is intercropped in the coconut plantations and the age of cocoa plantations are an average of eighteen years old. Most of the cocoa farmers (95%) belong to large farmer category and average land holdings ranged from 9 to 80 acres. Out of this cocoa occupies 1 to 50 acres with an average of 15 acres. Farmers were acknowledged that there is a change in the climate over the years in terms of rainfall intensity and quantity and the change is unfavorable to cocoa cultivation. Increased frequency of drought was also noticed by the farmers.

11.8 David J. Balte and R. K. Kalra, 2014. Impact of Progressive Beekeepers Association of Punjab in Terms of Economic, Personal, Technical and Social Benefits. ***Int. J. Ext. Educ.*** **X : 99-104.**

The study aimed to determine the benefits derived by the respondents being a member ofthe Progressive Beekeepers Association. Thepresent study was carried out in the state of Punjab, India with a sample size of 200 respondents who were members of the Progressive Beekeepers Association. Data were collectedfrom the selected respondents by administering a questionnaire pertaining to the benefits derived from the association. The results of the study revealed that majority of the respondents had derived high technical benefits (66.50%), high personal benefits (59.50%), high social benefits (47.00%) and medium economic benefits (54.00%) from the association. Among the various benefits,personal benefits emerged as the major benefits (mean score=323.86) derived by the respondentsfrom the association followed by social benefits (303.27), technical benefits (273.33) and economic benefits (260.83). Moreover. the results reported that more than half(52.00%) of the respondents had obtained high overall benefitsfrom the association.

11.9 Sarvesh Kumar, SRK Singh and R.C. Sharma, 2014. Impact of Kisan Mobile Advisory Service on Transfer of Agricultural Technologies. ***Int. J. Ext. Educ.*** **X : 70-72.**

The novel experiments on Kisan Mobile Advisory services was conducted by Krishi Vigyan Kendra through delivering messages twice a week to the registered mobiles on need based information technology in agricultural field. Through bulk message service messages were sent on aspects like crop production technologies, livestock management weather, marketing and other enterprise m their registered mobiles. Total 300 farmers and other KMA beneficiaries were registered as (Farmers-200, Extension personnel - 70, Input dealers - 30) for this study. After sending the messages for three years (2011, 2012 and 2013) responses were taken in month of March of each year. To get the feedback 50 percent members from each category were selected randomly for interview through telephone by calling them on their respective mobile number. In this way 100 farmers, 35 extension personnel and 15 input dealers were studied to know the impact of KMA services and their satisfaction. Messages were needful & timely reported by 82 per cent of farmers and 88.57 and 66.67 per cent for extension personnel and input dealers. The messages were fully applicable perceived by 42 per cent of farmer, whereas medium & partially applicable was reported by 48 & 49 per cent of farmers. The delivered messages were medium understandable for large majority 49 per cent of farmers, highly understandable for 82.87 per cent of extension personnel and for input dealers 60 per cent, respectively. It was also found that 80 per cent messages were fully applicable for extension personnel and 53.33 per cent for input dealers. The overall high impact of KMA services was reported

by 62 per cent farmer, 80 per cent and 60 per cent on extension personnel and input dealers respectively. Law impact was reported by eight per cet farmers, 8.57 per cent by extension personnel and 6.67 per cent by input dealers in Harda district of Madhya Pradesh.

11.10 Shweta S. S., Biradar and Ravi Belli, 2014. Pest Hot Spots and Impacts of IPM in Bt Cotton in Belgaum District of Karnataka. *Int. J. Ext. Educ.* X : 65-69.

Cotton (Gossyplum spp.) is a major cash crop, being the worlds leading natural fibre for the manufacture of textiles and edible oil. Climate has changed many times in response to a variety of natural causes. The work was carried out in five taluka of Belgaum district in Kamataka state covering 42 villages for five consecutive years from 2008 to 2013. The data anlysed clearly showed that the number of sprays, quantity of pesticides usage and cost of production increased from 2008-09 to 2012-13 only due to reduced rainfall. The study also revealed the impact of IPM measure over non IPM and spread of the IPM measures to adjacent non project area. This paper elaborate the hot spots as a result of changing rainfall, temperature and related factors of production and recommendation of alternate measures of monitoring and control of pests and natural enemies as an impact of advisory at regular intervals of cotton production period.

11.11 Sagar Mondal and Ratnamala Thokchom, 2014. Impact of Climate Change as Perceived by Scientists of Central Rice Research Institute, Cuttack, Odisha. *Int. J. Ext. Educ.* X : 52-55.

A study was conducted to assess the perception on climate change and its effect on envirotimimt. as perceived by the scientists of Central Rice Research Institute, Cuttack. Data were collected from 40 scientists by questionnaire method in the month of October to December 2011. For this purpose important five sectors, viz. environment, agriculture and allied, coastal zone, forest and wild life, hydrology and water resources were identified and presented to the scientists in 10 pairs. The scientists were requested to mark one component from each pair separately which would be more adversely affected than the other component due to climate change. For analysis of data the method of Paired Comparison were followed. It was found that due to climate change the environment will be severely damaged as perceived by the scientists of CRRI followed by agriculture and allied sector, coastal zone, hydrology and water resources and forest and wild life.

11.12 Ahire R. D. , P. S. Kapse and P. R. Deshmukh, 2015. Socio-economic Impact of Commodity Interest Group among Pomegranate Growers. *Int. J. Ext. Educ.* XI : 40-45.

The investigation was conducted in the Aurangabad district purposely as jurisdiction of KVK, Aurangabad to ascertain the socio-economic impact of commodity interest group (CIG) among pomegranate growers. The data were collected from the members of CIGs of pomegranate growers by personally interviewing them with the help of the specially designed interview schedule. The result revealed that majority of respondents were middle age group, educated upto secondary school level, small land holders, having medium area under pomegranate cultivation and medium level of source of information, economic motivation, social participation, extension contact, market orientation, knowledge and adoption of pomegranate cultivation technology. Remarkable change was observed among the pomegranate growers in terms of education, social participation, annual income, converted their house from kaccha to pacca, employment generation, possessions of farm implements, irrigation facilities and food consumption, whereas medium change was observed in terms of subsidiary occupation, possession of vehicle as compared to before formation of commodity interest group of pomegranate cultivation. The correlation coefficients depicted that most of independent

variables, viz. area under pomegranate, annual income, sources of information, social participation, knowledge and adoption of pomegranate cultivation were positively and significantly related with overall impact of commodity interest group on the respondents.

11.13 Roy Jayanta, K. Narayana Gowda, 2016. Impact Analysis of Mahatma Gandhi National Rural Employment Guarantee Programme in Dhalai District of Tripura. ***Int. J. Ext. Educ.*** **XII : 109-112**.

The study was carried out in Dhalai District of Tripura State during 2010-2011 to know the impact of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on the standard of living of beneficiaries. The overall mean value of standard of living of beneficiaries before MGNREGA programme was found to be 36.5 as compared to the overall mean value of60.1 after the implementation of MGNREGA programme. There is an enhancement ofmean value in the standard of living of beneficiaries by 65 percent indicating significant increase due to MGNREGA.

11.14 Shubhangi Parshuramkar, D. M. Mankar, N. R. Koshti, N. M. Kale, 2016. Impact of Mahatma Gandhi National Rural Employment Guarantee Act on Rural Livelihood in Eastern Vidarbha. ***Int. J. Ext. Educ.*** **XII : 46-53.**

The study was undertaken with an objective to assess the extent of impact generated by the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on rural livelihood within the four districts of Eastern Vidarbha region of Maharashtra specifically. Bhandara, Gondia, Gadchiroli and Chandrapur. For the study total thirty two villages were selected and a sample size of 320 beneficiaries. Data were collected in face to face situation on a pre-structured interview schedule. The results indicated that before joining MGNREGA only 35.31 per cent beneficiaries reported consumption of nutritious food, but after joining MGNREGA work 62.50 per cent beneficiaries reported improvement in consumption of nutritious food. In respect of material possession there was a significant increase in possession of mobile phones from 250 per cent to 69.06 per cent. The renovation work of house was undertaken by 23.43 per cent beneficiaries and 12.18 percent beneficiaries, reported to have undertaken the extension of house. The level of trust in the society and the local leaders also improved among the beneficiaries. Prior to implementation of MGNREGA, the membership of SHGs was 9.68 per cent; it was increased to 26.25 per cent after the participation in MGNREGA. The level of impact was of low medium category among 40.32 per cent beneficiaries, while 29.37 per cent reported high medium level of impact on livelihood support.

11.15 Bai Koyu, A. Sarkar, R. J. Singh, 2017. An Evaluative Micro Level Study on the Impact of MGNREGA in Arunachal Pradesh. ***Int. J. Ext. Educ.*** **XIII : 36-45.**

The present study conducted in Lower Subansiri districts and West Siang district of Arunachal Pradesh, has examined the micro level impact of MGNREGA. The study is based on 135 respondents comprises of beneficiaries, non-beneficiaries and government & panchayat officials selected from the four gram panchayat selected from two randomly selected blocks in the district. The profile of MGNREGA beneficiaries revealed that all possessed jab cars, majority of the respondents had medium level of awareness, on an average all the beneficiaries were getting7.87 days of employment per year, payment schedule was extremely erratic, no provision of unemployment allowance, none of the respondents received wages on time and neither were they sure about correct entries of job days in their job cards, saving pattern of the respondents was not affected by MGNREGA in any way. Socio-personal attributes like status of self reliance, self confidence, self esteem, social participation and social inclusiveness were reflective of no statistically significant change. Among beneficiaries and non-beneficiaries, significant difference could be observed in terms of educational status of family

members, expenditure pattern, extent of cosmopoliteness and social mobility pattern to mean that MGNREGA could not make any impact on those counts. In case of consumption pattern, there was significant difference in terms of pulses and vegetables consumption while in cases of cereals and protein (meat and fish) the differences between mean values were found to be insignificant. Main source of information for MGNREGA was their respective Gram Panchayats.

11.16 Roy Jayanta and K. Narayan Gowda, 2018. MGNREGA Transform Rural Lives of Dhalai District of Tripura : Impact Study. ***Int. J. Ext. Educ.*** **XIV: 13-17**.

The study was carried out in Dhalai District of Tripura State during 2010-2011 to know the impact of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on the standard of living of beneficiaries. The overall mean value of standard of living of beneficiaries before MGNREGA programme was found to be36.5 as compared to the overall mean value of60.1 after the implementation of MGNREGA programme. There isan enhancement of mean value in the standard of living of beneficiaries by 65percent indicating significant increase due to MGNREGA. Among the 15personal and sacio-phychological characteristics of the beneficiaries studied: aspiration, source of information, mass media participation, institutional linkage, achievement motivation and and deferred gratification had significant to highly significant relationship with the impact an standard of living of MGNREGA beneficiaries and all these variables together contributed to the tune of60per cent of the variation in the standard of living.

12. Interlaced Property Rights

12.1 Bhanupriya Choyal, K. P. Thakar, M. R. Prajapati and Ashok Patel, 2018. Geographical Indication as Credible Intellectual Property Asset for Agricultural Development : Indian Perspective. ***Int. J. Ext. Educ.*** **XIV: 99-112.**

The key objectives of the study were to undertake a review of literature for identifying successful GI agricultural products in India fetching premium prices in international market and other economic benefits; the challenges associated with the use of geographical indications (GIs) to promote agricultural products in the market and to recommend suitable strategies for brand building and marketing of GI products in Indian and international markets. However, the key challenges include tire process of registration which takes years and requiring legal assistance and financial resources which are beyond the capacity of small producers. Further, in the post-registration phase, there are significant costs which are inevident such as ensuring the recognition of GI in the market place, as well as the cost of monitoring and enforcement.

13. Mass Media

13.1 Nagaraja N., 2009. Comparative Analysis of Aptness of Agricultural articles Published in Kannada Dailies. ***Int. J. Ext. Educ.*** **V: 51-55.**

A study was conducted to analyse the agricultural articles published in three major Kannada dailies for their aptness. The aptness of agricultural articles was assessed by using a standardised scale, which had six aptness factors namely, utility of message, technical accuracy, adequacy of message, readability, treatment of message and author's credibility. Forty four agricultural articles published each by Prajavani, Vijaya Karnataka and Samyuktha Karnataka (totally one hundred and thirty two) were analysed far their aptness. The results revealed that there was no variation among the newspapers in respect of aptness of agricultural articles published in these newspapers. Further, majority of the articles from all the three newspapers fell under the moderate aptness category.

13.2 Abdul Sattar Fazely and M. Nataraju, 2010. Determinants of the Perceived Effectiveness of Mysore Journal of

Agriultural Sciences Published by University of Agricultural Sciences, Bangalore. ***Int. J. Ext. Edu.*** **VI : 9-14.**

The study was conducted at University of Agricultural Sciences, Bangalore to analyze the influence of soda personal characteristics of readers on their perception about the effectiveness of Mysore Journal of Agricultural Sciences. The data were collected from a purposively selected 80 subscribers consisting of University professors, scientists, extension personnel of UAS, Bangalore with the help of well structured, pre-tested questionnaire. The study revealed that most of the readers rated the Journal as moderately effective. Ease in reading, attractiveness of the title and design of the cover page, among cover page components; readability, accuracy, clarity, usefulness, relevancy and adequacy of information among content components and letter size and number of pages per article and Journal among format components received the highest perception score. A significant association was found between age, occupation, experience, education, annual income, type of membership, attitude towards print media, regularity in reading, mass media participation and purpose of reading with readers' perception level.

13.3 Karthikeyan C., 2012. "e-Velanmai" – An ICT Enabled Agricultural Extension Model. ***Int. J. Ext. Educ.*** **VIII : 24-30.**

Farmers in India lack timely access to scientific information on agricultural technologies to solve their farm specific problems. Action research was initiated during 2007 to pilot test an ICT based extension approach called 'e-velanmal' (means, electronic-agriculture) in India. ICT tools such as computer, internet, digital camera and mobile phone were handled by farmers/Field Coordinators (FC) to send images of crop status to researchers and get advice. Majority (85.37%) of small holders participated in 'e-agriculture' and accessed 2279 terms of technical advices to practice farming effectively. It was proved that farmers were willing to pay for availing ICT based agricultural extension services from experts based on the size of their farms. The turnaround time of dissemination was 1-3 hours in a day. The rate of adoption of scientific practices by the farmers was found to be high (77.00%). The advices helped farmers to improve their farm profit by INR 2102/acre (for seasonal crops eg: vegetable) and INR 310/acre (for plantation crops eg: Coconut) by achieving higher efficiency in the use of inputs. 'e-agriculture' facilitated participatory, cost effective, quality and timely extension service to promote sustainable farming and develop the livelihood status of farmers in the region. Based on the success achieved in the pilot experimentation, the project was upscaled in 19 command areas of Tamil Nadu state during 2011-12, e-agriculture extension model has been proven to perform well both in pilot as well as in the upscaled stages in Tamil Nadu and hence it is recommend to adopt it as one of the effective means to reach the unreached in India.

13.4 Tsokura Agber and Agwe E. Agwu, 2013. Computer and Internet Usage Skills of Agricultural Science Lectures of Tertiary Institutions in Benue State, Nigeria. ***Int. J. Ext. Educ.*** **IX : 1-7.**

The study examined Computer and Internet usage skills of agricultural science lecturers of tertiary institutions in Benue State, Nigeria. A structured questionnaire was used to collect data from 193 lecturers randomly selected from six tertiary institutions in the state and analyzed using frequency, percentage, mean scores and standard deviation. The result of the study showed that most of the respondents possessed general computer and internet skills in most of the skills tested, including renaming files (M = 1.24), cutting / copying and pasting between applications (M = 1.25); minimizing, maximizing and resizing windows (M = 1.26); saving and arranging files in folders (M = 1.28); properly shutting down personal computer (M = 1.37); connecting to the Internet and using any Internet browser (M = 1.30); knowing how to use search engines like Google and Yahoo (M = 1.33) and

creating and sending e-mails to other people (M = 1.31). However, certain skills, such as, using the disk clean-up tool (M = 0.87), running scan disk (M = 0.93), defragmentation of the hard drive (M = 0.76), knowing how to group contacts in email box (M = 0.90), knowing how to set up preferred default homepage (M = 0.89), subscribing and unsubscribing from email mailing list (M = 0.89), among other activities, were not well mastered by respondents. The study recommends the need for staff training and re-training to be built into staff development programmes to ensure that the knowledge of staff is constantly updated with relevant skills that are needed for effective teaching and learning.

13.5 Shirke V. S. and M. T. Rathod, 2013. Use of ICT Components by the Extension Personnel of Karnataka State. ***Int. J. Ext. Educ.*** **IX : 81-84.**

The Investigation was carried out in the year 2012-2013 to analyze the Use of ICTcomponents by the Extension Personnel in Belgaum district of Karnataka. The study exposed that majority of the extension personnel werefrom middle age group (58.82%), nearly one third of the extension personnel had education upto graduation level (32.35per cent) and majority of the extension personnel (66.67%) had not received Information and Communication Technology oriented trainings and the sources of information namely, television and print media used cent percent (100%) by the extension personnel. It was observed that large proportion of the extension personnel (62.75 %) had medium level of use of ICT components for transfer of agricultural technology. The study revealed that with increased level of education, trainings undergone on ICT, sources of information of the extension personnel were having significant and positive relationship with the level of use of ICT components for the transfer of agricultural technology. The age of the extension personnel showed negative and significant relationship with the use of ICT components for transfer of agricultural technology.

13.6 Balarubini and C. Karthikeyan, 2014. Content Analysis of News Published about TNAU in English and Tamil Dailies. ***Int. J. Ext. Educ.*** **X : 88-92.**

Content analysis described as the scientific study of content of communication. The effort of the press in carrying agricultural news to the entire population becomes important because of the role food plays in the national polity an, survival Since extension agents are change agents and newspapers are vehicle of change thus newspapers become vital in the social change process. A purposive sample consisting of two popular English daily newspapers (The Hindu and New Indian Express), and two popular Tamil daily newspapers (Dinamalar and Dinathanthi) were selected and surveyed from January 2010 to December 2012. All Tamil Nadu Agricultural University related news items that appeared during the period, were taken from these selected four daily newspapers. Result showed that in reported agricultural issues, majority reported 1-2 stories per day representing 92.39, 91.04 and 90.31 of total sample size in 2010, 2011 and 2012 respectively. The subject matter coverage that attracted the highest reportage was information, technology, advisory services, forecasting. The formats of presentation around 45-47 per cent of the news Issues covered comprised picture + text only. Finally, the readability that both English and Tamil dallies are Very Hard to read/understand. The authors concluded that newspaper are not likely to make significant contribution to the dissemination of agricultural information for enhanced agricultural production.

13.7 Mridula N., P. Ahamed and S. Helen, 2015. User-centered Contents and Design for the Website of Directorate. ***Int. J. Ext. Educ.*** **XI : 28-33.**

Websites being an internet identity that is essential for the success and future of any organization. a user centered, bilingual website prototype was developed for the Directorate of Extension (DoE) of Kerala Agricultural University

(KAU),India. The methodology followed User-Centered design (UCD) project given by ISO 13407. The web prototype was designed based on the information needs of agricultural scientists, agricultural extension officers and farmers. The study identified the main and sub contents for the DoE website, which gives an overview of the information need of the primary stakeholders regarding the agricultural websites. The information Need Indices (INI) calculated based an main study scores determined the relevance of each item for each group. The high agreement between the respondent groups regarding each information need shows that a user-centered web design would be more effective and efficient for the extension activities of any organization.

13.8 Ghosh Amitava, Arpita Sharma and S.S. Dana, 2015. Effectiveness of Fisheries Based Programmes Telecast by Public and Private Television Channels in West Bengal. *Int. J. Ext. Educ.* XI : 17-22

Aquaculture is a growing sector with an ability to have significant impact on economic development of country. Out of total fish production inland fish production in India contributes 4.930 million metric tones and West Bengal ranks first in this regard. In the state, number of agriculture based audio-visual programmes are telecast via public (Doordarshan DD) Bangla) as well as private (ETV-Bangla) television channel. There are specific fishers based programmes telecast on DD Bangla (Krishi Darshan) and other private channels like ETV Bangla (Annadata). A study was carried out to measure the effectiveness of fisheries based television programmes in West Bengal North 24 Parganas and south 24 Parganas districts were selected for the study as they ranked first and second in fish production in the state. A total of 60 viewers each from two districts making a total of 120 viewers were administered a structured interview schedule. Effectiveness was measured using a five point Likert scale. Parameters on which effectiveness of Krishi Darshan and Annadata programmes were scored were modes of programming segments of programming contents of programmes and other related issues, Mann-Whitney U-test revealed statistically significant difference with respect to effectiveness scores between Krishi Darshan and Annadata Average effectiveness score for Krishi Darshan was 3.28 and for Annadata it was 3.36 Both the scores were above 3 but less than 4 suggesting that both the programmes were moderately effective, suggesting scope of considerable improvements.

13.9 Jha B.K., Niva Bara and S.K. Jha, 2016. Application of Agricultural Information Accessed through Mobile. *Int. J. Ext. Educ.* XII : 87-90.

Mobile has emerged as the technology whose spread has Surpassed all predictions and records. After its successful use in trade commerce and banking, it is applied in governance and agricultural extension. A number of initiatives like Kisan Call Centre (Toll free number 18001801551). Mobile portal (http://mkisan.gov.in), Voice SMS (http://www;iksl.net) has been taken to provide mobile-based services to the farmers. All these initiatives aim at empowering the farmers are expected to apply for increasing productivity and profitability. A study was conducted in Jharkhand state of India to ascertain the application of agricultural information accessed through mobile. Data were collected from the purposively selected districts one each from three agro-climatic zones of Jharkhand on the criteria of mobile user base. The findings revealed satisfactory level of information application. The selected independent variables viz. family education social participation, extension contact, mass media and IT exposure, attitude towards mobile, annual agricultural income, information needs, knowledge about mobile feature, level of aspiration about mobile and monthly expenditure on mobile service were found positively and significantly correlated with information application at I percent level of probability. Age was found negatively and

significantly correlated at I per cent level of probability. However, innovation proneness was found positively and significantly correlated at per cent level of probability. However innovation proneness was found positively and significantly correlated as per cent level of probability. The selected independent variables could explain the variability up to 41.6 percent whereas the variable information needs alone contributed up to 34.6 per cent. Hence, intervention like awareness programme should be undertaken so that felt needs could be expressed and unfelt needs could be converted into felt needs.

13.10 Krishna D. K. N. V. Kumbhare, R. N. Padaria, and Pemlata Singh, 2016. Comparative Analysis of Sustainability of Selected Community Radio Stations. ***Int. J. Ext. Educ.*** **XII : 30-45.**

The community radio has made an impression in all grounds of rural society with specific need of sustenance in the long run. The study was token up to compare the status of three community radios operational each under State Agricultural University (SAU). Krishi Vigyan Kendra (KVK) and Non-Government Organization (NGO). Four villages have been selected randomly from one purposively selected block. Forty (40) respondents from four randomly selected villages from each CRS coverage were selected for the study. Thus. a total of 120 respondents constituted the sample of the study. Sustainability of radio station is considered as the combination of social sustainability (social capital and social equity), operational sustainability (suitability of approach and training-cum problem solving) and financial sustainability. The sustainability index of NGO-CRS was found to. 0.60 followed by KVK-CRS (0.58) and SAU-CRS (0.57). It is also revealed that financial sustainability of NGO,CRS was found more important than other indicators of for its long term sustenance.

13.11 Chahal V. P., Jogender Singh and Vidyalata, 2017. Farm Broadcast Listening Behavior of Farmers in Haryana. ***Int. J. Ext. Educ.*** **XII : 7-10.**

Modernization of agriculture is possible when farm innovations are disseminated effectively to millions of farmers through various communication media and channels. Radio as a medium has great potential for creating awareness about new agricultural technology among fanning community, changing attitudes and motivating farmers to adopt new innovations. From late thirties, India realized the power of farm radio broad casting for the benefit of farming community. The use of radio as a potent source of information depends on the listening behavior of farmers. Therefore, present study was conducted using survey method in the state of Haryana with a sample of 200 farmers to know the various dimensions of listening behavior in response to eight Farm Radio Programmes (FRPs) broadcast daily from Delhi and Rohtak Radio Stations. These programmes are aired three times in a day i.e. morning (Krishi Charcha and Krishi ki Batein) afternoon (Khet Khalihan and Unnat Krishi) and evening (Grameen Sansar and Gram Sansar). Besides, Krishi Jagat is aired in evening from both stations. The study revealed that majority of the farmers had low to medium level of listening behavior status with regard to farm broadcasts. As far as awareness of name, time and duration of broadcast and frequency of listening are concerned, evening chunk FRPs were found more popular among the large majority of farmers. The majority of farmers did not preserve farm information. However, they simply memorized and discussed it with fellow farmers and family members. All the personal and socio-psychological attributes were found to have positive correlation with the listening behavior of the farmers.

14. Marketing

14.1 Mishra B. and S. Mishra, 2017. Buying Behavior of Rural Consumers towards Selected FMCG Products. ***Int. J. Ext. Educ.*** **XIII : 100-103.**

Fast moving consumer goods (FMCG) also known as consumer packaged goods are consumed every day by the average consumer and used up over short period of days, weeks or months and within one year. The items in FMCG include all consumables (other than groceries, pulses) that people buy at regular internals. In the front of rising incomes of rural consumers they are willing to buy products which improve their life style. At this advent a study entitled 'Buying behaviour of rural consumers towards selected FMCG products' was undertaken in order to investigate the buying pattern of rural consumers, the factors affecting the buying behaviour of rural consumers towards FMCG products and their decision making process, their level of satisfaction on attributes like price. quality, free offers, packaging, replace facility, quantity, availability, variety, purchase experience with regard to FMCGs. The products chosen for this study are dental care, face powder. detergent powder, soft drink and biscuits. This study reveals, how rural consumers make decision to spend their available resources (time, effort, money) on consumption related item, their reactions towards different product features, price and advertisement, in 'order to ensure strong competitive advantage and their satisfaction level towards different attribute of FMCG products like price, quality. availability quantity etc. The present study concluded that the consumers prefer to buy FMCG brands from haat/mandi. Majority of the consumers stick to particular brand for more time. Advertisement is the most influencing factor on buying any FMCG brand.

14.2 Soumya C, K. P. Thakar, M.R. Prajapati, Ashok Patel. 2018. Agricultural Marketing in India: Major Reforms. *Int. J. Ext. Educ.* XIV : 25-34.

The agricultural marketing in tire modern era is faced with many challenges. Inadequate market information and non- availability of market information at proper time to the framers, lack of grading and standardization facilities, presence of large number of middlemen, lack of storage facilities, non availability of adequate institutional credit, mal practices in the market etc. are the important challenges faced by the agricultural marketing in India. To address these challenges, Government over the years have introduced many reforms. The major reforms are Model APMC Act 2003, direct marketing, contract forming, Producers Co- operatives, Model State / UT Agricultural Produce and Livestock Marketing (Promotion & Facilitation) Act, 2017, Operation Green, GrAMs, Farmer Producer Organisations, enhanced coverage of Future Markets, Price Stabilization Fund etc. With these reforms the former's income was increased and greater efficiency was achieved in agricultural marketing. This paper highlights the challenges in agricultural marketing, major reforms that have taken place in agricultural marketing in India and the ways in which it has benefitted the different stakeholders involved in the agricultural marking This paper also examines the constraints in the present system of agricultural marketing and the need for improvement in the present system.

14.3 Sasane G. K., 2018. Export of Pomegranate from India : Opportunities and Constraints. *Int. J. Ext. Educ.* XIV : 72-79.

The present study was conducted with the objective to study the profile of the pomegranate exporting growers, to study the extent of technological gap in recommended and exporting growers, to find out the relationship between selected independent and dependent variables of the pomegranate exporting growers, to elicit the constraints faced by the pomegranate exporting growers, to obtain the suggestions made by the pomegranate growers.

14.4 Kumaravel P., 2018. Impact of Rainbow (Vanavil) Weekly Bazar As an Innovative Marketing Methodology in Doubling Farmers' Income in Kancheepuram District of Tamil Nadu. *Int. J. Ext. Educ.* XIV : 80-83.

The production of agricultural and livestock

commodities has increased considerably over tire decades. The agricultural and livestock produce in Kancheepuram district has considerably increased over tire years leading to enhanced food grain and livestock production of Tamil Nadu state. The KVK trained fanners of Kancheepuram District are struggling to market their agricultural and livestock produce due to unorgranised marketing system and middlemen exploitation leading to less profit and sometimes incurring, huge loss. An innovative marketing methodology namely "Vanavil Weekly Bazzar" has been initiated by KVK, Kancheepuram, in collaboration with Integrated Livestock Producers Association (ILPA), a registered society of KVK, trained fanners to overcome the marketing problems. A total of 40 KVK trained farmers Entrepreneurs were marketing their produce and products at the Bazaar directly without middlemen involvement and currently the number has decreased to 30. The consumers are visiting the bazaar to procure paddy/rice, green fodder, goats, rabbits, Desi chicken, Japanese Quails and vegetable seeds etc. Value added milk products like Rose milk, Carrot milk, Paneer, Khopa prepared by KVK trained SHG women are sold at the bazaar. The weekly turnover of the Bazaar in the initial year (2014-15) was Rs. 1.5 lakhs and has gradually increased to 2.25 lakhs per week (2017-18) and on an average farmer/ Entrepreneur is profit of Rs. 1000-3,000/- per week by selling their produce / products without middlemen, thus creating significant impact in terms of income generated among the KVK farmers. The number of consumers visiting the bazaar week ranges from 468 -480 per week for purchasing tire commodities at tire bazaar.

14.5 Ravikumar R. and P. Kumaravel, Awareness Level Among Goat Farmers about Various Market-led Institutions in Tamil Nadu. ***Int. J. Ext. Educ.*** **XV : 76-78**

The present study was conducted to assess the level of awareness among the goal formers about various market-led institutions in Tiruchirappalli and Salem districts of Tamil Nadu. A sample size of 120 goal formers (60 goal formers from each district) who were actively involved in goat rearing were randomly selected for the study. A well structured pre-tested interview schedule was employed for the data collection for the study. The awareness about each market -led institution by the respondents was measured by 'Yes' or 'No' questions and a score on one and 'zero' was assigned respectively. The analyzed data revealed that 61.67 per cent of respondents were aware of commodity/farmer interest groups (CIG/s/FIG's) and only 1.67 per cent of respondents were aware of Fanner Producer Organisations (FPO's). All the selected respondents wert aware of Uzhavar Sandhai (Farmers shandy) and almost all of the respondents (98.33 per cent) were aware of unorganistd goat markets. The limited awareness with respect to FPO's in the study area was that the formers wert not apprised of the significance of FPO's by rural banks and other Government agencies.

15. Rural Youth

15.1 Victor Chibuzor Umunnakwe' and V. K Pyasi, 2014. Terminants of Livelihood Patterns among Rural Youth. ***Int. J. Ext. Educ.*** **X : 19-26.**

Many rural youth are faced with difficulty of maintaining livelihoods and consequently, poverty remains pervasive among them. The importance of income generating activities to rural livelihood cannot be over-emphasized. The paper examined the involvement in income generating activities among rural youth in Jabalpur district of Madhya Pradesh, India. Multi stage random sampling was used to collect data from 247 respondents. Majority of respondents had high mass media exposure and medium innovativeness respectively. There was significant relationship between involvement in income generating activities and socio-economic and psychological characteristics (R2=0.475), Marital status (t=2.913), respondents' education (t=-3.467), employment status (t=3.770), achievement motivation (t=2.719), innovativeness

(t=3,321), fatalism-scienticism (t=-3.707), mass media exposure (1=8.469) and reasons for educational and vocational training (t=5.122) were predictors of income generating activities engaged by rural youth at I per cent significant level while more than 1/3 of the total accountable variation was explained by mass media exposure. Governmental and non governmental organizations should take into consideration all income generating activities engaged in by rural youth when initiating and embarking on programmes targeted at improving their livelihoods.

15.2 Shivaramu K., M.S. Nataraju and D.K. Suresh, 2019, Perception of Farm Youth towards Agriculture. *Int. J. Ext. Educ.* XV :79-87.

The study was conducted in Mandya district of Karnataka State, India by selecting four villages each in Rainfed area and in Irrigated area. In each selected village 25 farm youth were randomly selected. Thus, 100 farm youth each from rainfed area and irrigated area were personally interviewed using pre-tested interview schedule. As high as 77% and 75% of Farm youth in rainfed area and irrigated area respectively reported that they were not interested to become farmers.

16. Psychological Measurements

16.1 Faham E., A Rezanfer and Shamekhi, 2007. Analysis of Socio-psychological Factor Influencing Forest Dweller's Participation in Conservation of Forest Areas. *Int. J. Ext. Educ.* III : 18-27

The main purpose of the study was to investigate the association between forest dwellers' participation in conservation of forest areas in west Mazandaran of Iran and a set of socio-psychological variables. The statistical population included all forest dwellers living in villages, which are located in the west Mazandaran in Iran and had been covered by local forestry cooperative. A sample of 110 forest dwellers were selected by the use of "stratified proportional random sampling' method A questionnaire was used to collect data. For determining the validity of questionnaire, the content validity was used. Cronbach's alpha was used to measure reliability of index measuring 'level of participation in conservation of forest areas" and its extent was 0.72 which showed that mentioned variable has reliability. The data were analyzed by the use of descriptive and inferential statistics. The findings revealed that level of communication channels and information resources, level of social participation. Level of social interaction level of social solidarity, level of awareness about importance of forest, level of awareness about degradation factor of forest, attitude towards participation, level of economic social and environmental motivations, have been positively and significantly (P<0.01) correlated with level of forest dwellers participation in conservation of forest areas. The results of multiple regression showed that communication channels and information resources level of social participation and level of environmental could explain 62.4% of the variation in level of forest dwellers participation in conservation of forest areas.

16.2 Jyothi V. and B. Vijayabhinandana, 2010. A scale to measure the attitude of Post-graduate students towards Information and Communication Technologies *Int. J. Ext. Educ.* VI : 42-44.

A scale was developed to measure the attitude of Post-graduate students towards ICTs based on Likert' method of summated rating. A tentative list of 64 statements each expressing the attitude of students towards ICTs was collected and edited in the light of the informal criteria suggested by Thrustone and Chave, Likert and Edward and 61 statements were retained. These statements were framed such that they expressed the positive or negative attitude. The respondents were asked to indicate their degree of agreement or disagreement with each statement on a five point continuum ranging from strongly agree to strongly disagree. The score of each individual item on the scale was

calculated by summing up the weights of the individual items. On the basis of the total score, the respondents were arranged in descending order. The top 25 per cent of the respondents with their total scores were considered as the high group and the bottom 25 per cent as the low group, so that these two groups provide criterion groups to evaluate individual items. In order to find out the discriminating index for each item, 't' value was calculated using the formula and procedure given by Edwards . The scale so developed finally consisted of 24 statements (13 positive and 11 negative).

16.3 Parande P.J., N.S. Shivaling Gowda and A.D. Ranganatha, 2011. A Scale to Measure Farming Distress Orientation among Farmers. ***Int. J. Ext. Educ.*** **VII : 52-56.**

Farming distress orientation refers to the degree to which farmers are oriented towards recurring and unanticipated stresses and capable of adjusting to various livelihood strategies and coping mechanisms to overcome such distress(es). An attempt was made to develop a scale to measure the farming distress orientation among farmers based on Likert's method of summated rating. Total 42 statements each expressing the farming distress orientation among farmers were listed. These statements were farmed such that they expressed the positive and negative farming distress orientation. These items were then subjected to scrutiny by an expert panel of judges to determine their relevancy and subsequent screening of items for their inclusion in the final scale. Later 37 statements were selected which had relevancy percentage of 80.00 and above relevancy weight age of 0.80 and above and mean relevancy score of 3.50 and above and subjected to item analysis. A schedule consisting of 37 items was prepared and used for personally interviewing 40 farmers from the non-sample area. Response for the items was obtained on five point continuum ranging from strongly agree to strongly disagree. Farming distress orientation score for each respondent was obtained by summing up the scores of all the items. On the basis of the total score, the respondent were arranged in ascending order. Twenty five percent of the respondents with highest total scores and twenty per cent with lowest total scores were selected. In order to find out the discriminating index for each item, 't' value was calculated. The scale so developed finally consisted of 37 statements (27 positive and 10 negative.)

16.4 Tekale V.S., D.N. Bhalekar' and J. I. Shaikh, 2013. Entrepreneurial Behaviour of Dairy Farmers. ***Int. J. Ext. Educ.*** **IX : 32-36.**

This study was conducted in Hingna and Kalmeshwar tahsils of Nagpur district of Maharashtra State. The main objective of the study was to know the entrepreneurial behaviour of dairy farmers. Majority (67.00%) of the respondents were in middle age group, 46.00 per cent were educated up to higher secondary level, majority (81.00%) of the respondents ha agriculture and dairy as an occupation, majority (65.00 %) respondents belonged to medium family size, small medium fanners land holding category (51.00%), majority had their annual income between Rs.1,00,001 to Rs 1,50,0001, (67.00% with medium animal herds size and medium level of social participation (64.00%), 55.00 percent had high level of extension contact and majority (71.00%) of them come under medium level of economic motivation. The results revealed that two third of dairy fanners belonged to medium entrepreneurial behaviour. In case of entrepreneurial behaviour components, half of the respondents had medium level of innovativeness and medium level of achievement motivation. Majority of the respondents fell in to medium category of decision making ability, high level of risk orientation, high level of co-ordination. ability, medium category of cosmopoliteness and medium level of self confidence. Nearly half of the dairy farmers ha, medium planning ability. More than three forth of the respondents had medium level of information seeking behaviour an, more than half of the respondents had medium level of profit orientation.

16.5 Preethi, M.S. Nataraju and M.T. Labbmlnarayan, 2014. Development of a Scale to Measure Perception of Farm Youth towards Agriculture. ***Int. J. Ext. Educ.*** **X : 165-167.**

Farm youth are precious human assets who can play an important role in the developmental activities as well as in agriculture. It is important for the rural youth to have clear understanding and correct perception towards agriculture. An attempt is made in the study to construct a scale to measure the perception of farm youth towards agriculture. The method of ratings was followed in the construction of perception scale. The scale developed was found to be reliable and valid.The perception scale developed was administered to 30 Farm youth of Chickballapura taluka of Chickaballapur district of Karnataka stale during 2014. The results revealed that 46.67 per cent of farm youth had high level of perception towards agriculture, whereas 30.00 and 23.33 per cent of farm youth had medium and low levels of perception towards agriculture, respectively.

16.6 Sridevi K and V. Sekar, 2014. Scale Measuring Attitude of Coffee Growers towards Extension Services of Coffee Board, 2014. *Int. J. Ext. Educ.* X : 56-59.

Recommended technologies of Coffee Board has great potential to achieve higher yield at lower cost of production along with conservation of natural resources and improve the quality of coffee. Therefore it is desirable on the part of coffee growers to adopt the recommended technologies. It is presumed that following advisories rendered or adopting recommended technologies to increase the productivity of coffee becomes easier once the coffee growers have favourable attitude towards extension services of Coffee Board. The present study was contemplated to develop and standardize the same. The method of equal appearing intervals was used to finalize the attitude scale for this study purpose. The final scale was comprised 10 statements (5 positive and 5 negative).The attitude scale was administered on the 175 coffee growers of Pulneys division to measure their attitude towards extension services of Coffee Board. The study revealed that a vast majority (92.57 %) of them had favourable attitude to wards extension services of Coffee Board.

16.7 Mishra B., C. Satapathy and R. Mishra, 2014. Sustainable of agriculture as perceived by small farm operators in Remote areas. *Int. J. Ext. Educ.* X : 40-44.

Sustainable agriculture is the main theme of Green Revolution at post phase stage. The meaningful implementation of elements leading to sustainability needs to be fully understood by the farmers operating at the gross root level being mentioned by the concept of the study was, undertaken in order 10 examine the preferences of small farm operators about i). ecological factor, ii) economic viability, iii) social accessibility iv) adaptability measures and humaneness. After reviewing the literature. the study was conducted in four coastal districts of Odisha with a randomized sample of 200 small farm operators from eight villages spread over four blocks, The result reveals that soil, water, nutrients and type of farming of ecological factors followed by profitability, income and production are the factors of economic viability need to be fully understood to bring balance between sustainability and profitability. Social accessibility qualified by market opportunities, village resources and participatory decision making process enriched the feelings of small farm operators towards sustainable agriculture. To add to respect for honourable living, cordial relationship, feelings for others and social solidarity provide strong inputs for sustainable agriculture in coastal belt of Odisha. Accommodation to social change, preference of consumers, creation of market demand are important parameters of enhancing adaptability measures to work towards sustainable agriculture.

16.8 Alok Kumar and Ranvir Kumar, 2014. Standardized Scale of Social Audit for the Extension Institution and Services. *Int. J. Ext. Educ.* X : 34-39.

Social audits make organizations / services more accountable towards society. It is being used as a management. tool assess the degree of success of various initiatives of the institution / services in terms of anticipated outcomes assesses the mechanics of accountability degree and level of

transparency awareness and impact. To make social audit more scientific, a standardized scale is hereby developed to link the growth of social responsibility movement This study was conducted in the twelve purposively selected districts of Bihar namely Banka, Bhagalpur, Pahla, Nalandn Munger, Purne. Saran, Gopalganj, Muzaffarpur, Vaishali, East Champaran & Siwan, Out of each selected districts, two blocks were select purposively. A cluster of two village panchayats from each of the selected blocks were identified. A sample of 40 respondents was selected from each Village panchayats and accordingly total 1960 respondents were interviewed for the purpose. An exhaustive survey was conducted on eight dimensions of SocialAudit. Likert technique was used for constructing the scale to measure the Social Audit of Extension Institution Services. The study revealed that out of fifty two items related to technological, economical, social religious, technology transfer, legal, time programme execution areas of Social. Audit. Thirty six items were found significant which constitute the scale for social audit. The highly significant correlation coefficients r = 0.78 indicate that the study was highly stable or dependable for measurement.

16.9 Oyedele O.O, O.O.Ezekiel, O.Adeblsi-Adelani and I. B.Adeoye, 2014. Consumer Perception and Awareness of Mango Leather Products in Oyo State, Nigeria. ***Int. J. Ext. Educ.*** **X : 10-13.**

Fruits due to their highly perishable nature record considerable post-harvest losses which are major problems in the value chain. Processing of fruits into leather will go a long way in enhancing storage stability and reduce post-harvest losses encountered in the fruit sub sector. Evaluating consumer perception and awareness of a product will determine acceptance, view and market potential of a commodity. This study therefore examined perception and awareness of consumers on mango leather products in Qyo State, Nigeria. Primary data collected from 144 respondents in 3 local government areas in the state were analyzed using descriptive statistics. Results revealed that majority (68.1%) of respondents were between the ages of 21-40 years, educated 73.6 per cent and mostly married (76.3%). Most of the respondents (57.6%) were aware of the product made from mango while 86.1 per cent of the consumers were not aware of mango leather product. Most of the respondents (81.3%) agreed that mango leather will be able to compete with other snacks. Furthermore, mast of the respondents preformed leather from mango (68.8%) compared to carrot and the blend of mango/carrot leather. Eighty six percent of the respondents agreed that mango leather product will reduce bulkiness of the product and wastage. Majority of the respondents perceived mango leather products as favourable (58.3%). There is the need create awareness of fruit leather products in the state as a viable option to minimize produce loss being encountered in fruit industry.

16.10 Kirti, Dipak De and Abhishek Singh, 2015. A Scale on Digital Empowerment of Digital Natives, ***Int. J. Ext. Educ.*** **XI : 34-39.**

Now a days, digital technology has generated a new dimension to information as it is being turn out to be a prime commodity. In addition, connections of networks have attributed to the fast communication with a 'real time' feeling among people across the world. Due to the rapid development distribution of digital media over the last two decades, access to this media has become crucial of being an active player in our contemporary society. The accessibility of the ICTs must be there because it is Digital access which divides the society not the Digital technology as technology integrates the society. So an effort is made to provide digital technologies to the members of the society. Simply providing access is not the only solution but also making the people empowered to use the digital technologies. Therefore there is a need to know the digital empowerment status of the individuals by

developing a tool. If the tool is not standardized and only applied then result will be questionable. Hence, a scale on digital empowerment has been developed based on summated rating (likert technique). Digital empowerment is operationally defined as "a process through which an individual is making fit to the digital technology and harvesting the maximum potentials of the technology with reference to psychological, economical, legal and technical competency". The scale consists of fifty three items under the sub category namely psychological (11 items), legal (10 items), economical (15 items) and technical competency (17 items) based on exclusion criteria.

16.11 Manjula, N.,Nagaraja. N. and Rajanna, N, 2015. A scale to Measure the Cognitive Domain of Extension Functionaires on Climate Change. ***Int. J. Ext. Educ.*** **XI : 12-16.**

The learning is classified into three domains viz, cognitive domain, affective domain and psychomotor domain. Each of the domains was further classified into sub domains. The sub domains of the cognitive domain include knowledge, comprehension application, analysis, synthesis and evaluation strategies for the simplest behavior to the most complex. A research study was conducted to compare the effectiveness of two instructional methods namely, programmed instruction (PI) and lecture method in terms of changes in the cognitive domains of extension functionaries on the subject 'climate change impact, mitigation and adaptation strategies in agriculture. As part of the study, an attempt has been made to develop a scale to measure the cognitive domain of extension functionaries on climate change. The validity of the scale was established using content and construct validity (internal consistency technique was used), Values ranged from 0.596 to 0.899. The test retest reliability (0.681) and split half reliability (0.829) were used to established reliability of the scale. The norms of distribution of cognitive domain scores obtained by using developed scale was also established. When the scale was used to measure the cognitive domain of extension functionaries, the frequency distribution and the graphic presentation (distribution and ogive) showed the distribution having approached normal curve. The values of measures of central tendency, variability. divergence normalcy and test of goodness of fit also indicated the normal distribution of' the frequencies. The scale developed was objective and a useful tool for the researchers and extension functionaries.

16.12 Abdul Sattar Fazely and M.S. Nataraju, 2016. Scale to Measure the Job Satisfaction of Teachers working in State Agricultural Universities. ***Int. J. Ext. Educ.*** **XII : 32-35.**

A scale to measure the job satisfaction of teachers working in State Agricultural Universities was developed using summated ratings method. The job satisfaction scale developed was found to be reliable and valid. The scale developed is useful in explicitly measuring the job satisfaction of teachers working in State Agricultural University. The satisfaction scale was administered to 30 teachers working in the College of Horticulture, University of Horticultural Sciences Campus, Gandhi Krishi Vignana Kendra, Bangalore. It was found that 43.33 per cent of teachers had high level of satisfaction whereas 30.00 and 26.87 per cent of teachers had medium and low levels of satisfaction towards their job respectively. It can be concluded that the scale developed is useful in explicitly measuring the satisfaction of teachers towards their job.

16.13 Pallavi Talukdar and Juliana Sarmah, 2016. Attitude of Medical Functionaries towards the Need of Nutritional knowledge of Nurses in Selected Hospitals of Assam, India. ***Int. J. Ext. Educ.*** **XII : 24-27.**

Nutritional knowledge and attitudes of medical functionaries from government and private hospital in selected districts off Assam, India was studied. About 90 per cent of practicing nurses had favorable attitudes towards nutrition. Age of the nurses exhibited positive Influence toward the nutritional knowledge, while general educational

qualification and mass media exposure had no significant Correlation with the attitudes. Relationship between the nutritional knowledge of respondents with their opinion towards the need of the nutritional knowledge reveled that their was highly and positive significant correlation between nutritional knowledge of the respondents with their opinion towards their own role in nutrition education and knowledge of nurses. Knowledgeable nurses had more positive altitudes toward their own role in nutrition education and towards towards the team approach to health care.

16.14 Mamtha Lakshmi, N. S. Shivalinge Gowda and M. S. Nataraju, 2016. Development of A Scale of Measure Livelihood Security of Agricultural Laboures. ***Int. J. Ext. Educ.*** **XII : 1-5.**

The present investigation designed to develop a scale to measure livelihood security of agricultural laboures and to compare the livelihood security status of agricultural labourers in different agricultural situations. To construct the scale method suggested by the Likert (1932) in developing summated rating scale was followed and developed scale was found to be reliable and valid.The developed livelihood security scale was administered to 210 agricultural laboures in six districts of Karnataka state viz, Kolar, Chickballapur, Mandya, Mysore, Coorg and Chickamagalur. In rainfed situation more than half of the respondents (57.14%) belonged to low level of livelihood security. Similarly in the irrigated situation slightly more than fifty per cent of the agricultural laboures (64.29%) had medium level of livelihood security. Correspondingly 54.28 per cent of the agricultural labourers fall under high level of livelihood security in plantation situation. In case of pooled situation. 39.52 per cent of the agricultural labourers belonged to medium level of livelihood security which is tracked by 32. 38 per cent and 28.10 per cent had high and low levels of livelihood security respectively.

16.15 Patel P. C., J. B. Patel and N. G.P atel, 2017. Scale to Measure Attitude of Tribal Livestock Owners towards Vaccination in Ruminants. ***Int. J. Ext. Educ.*** **XIII : 92-94.**

The study was conducted to develop and standardize the reliable and valid scale, to measure attitude of tribal livestock owners towards vaccination in ruminants. Appropriate statistical methods 'Scale product method' was used. which combines Thurston and Likert techniques. Twenty five (25) statements were selected for judgment; a panel of 50 judges was requested to assign the score for each statement on five point continuum. Based on the scale (median) and Q values, fourteen (14) statements were finally selected to constitute attitude scale to measure towards vaccination in ruminants.

16.16 Rathod M. K., P. D. Khavare and Pravin Chavan, 2019. Attitude of Orange Growers towards Drip Irrigation Technology. ***Int. J. Ext. Educ.*** **XV : 149-153.**

Present study was conducted in Nagpur district. Sample of 120 orange growers was selected and interviewed personally. An exploratory research design of social research was used for the study. Data was collected know the attitude of orange growers towards drip irrigation. Attitude test developed for the study indicated that 48.33 per cent and 33.33 per cent orange growers were agree and strongly agree to the attitude statement that drip irrigation technology increases about 70 per cent extra area under irrigation, respectively. Respondents also agree and strongly agree that strongly agreed that drip irrigation maximizes utilization of available water (42.50% and 31,61%). However, majority of respondents (34.15% and 20.83%) found strongly disagree and disagree towards the statement that during wind velocity equal distribution of water is impossible. In all the majority of respondents (71.66%) moderately favourable attitude towards use of drip irrigation in orange crop.

16.17 Kharde P.B. and D.H. Madhe, 2019 Attitude of Farmers towards Jalyukta Shivar Abhiyan. ***Int. J. Ext. Educ.*** **XV : 132-139**

Considering drought- like situation occurring frequency in the state, Jalyukta Shivar Abhiyan is being taken up under 'water for all-drought-free Maharashtra 2019'. The programme aims to make 5000 villages free of water Scarcity every year. An irrigation potential of 22,74,744 ha. has been created in Maharashtra through Jalyukta Shivar Abhiyan. The study was undertaken with an attempt to analyse the farmers attitude. The present study was conducted in two tahsils namely Parner and Jamkhed of Ahmednagar district of Maharashtra with sample size of 120 respondents from 10 villages. It was observed that more than half of the respondents (59.17 %) had moderately favoarable attitude towards Jalyukta Shivar Abhiyan, followed by highly fovourable (22.50 %) attitude and less fovourable (18.33%) attitude of respondents towards Jalyukta Shivar Abhiyan. The majority respondents were satisfied with the Jalyukla Shivar Abhiyan and wanted to continue with this programme.

17. Selfhelp Groups

17.1 Jancy Gupta and Saidur Rahman, 2011. Self Help Groups in India : Impact and Sustainability. ***Int. J. Ext. Educ.*** **VII : 57-60.**

Self Help groups (SHGs), group of 10-20 people of underprivileged section of the society, joined together to fight the poverty and the emergence of these groups have given a ray of hope in extending sustainable financial services to the rural poor. The SHGs today have become movement to undertake diverse developmental agenda and recognized as an effective strategy for the empowerment of poor in rural areas bringing together from all spheres of life to fight for their rights. Sustainability of these SHGs is mainly dependent on financial and organizational strength and self sufficiency of the groups. For sustainable development of the poor and rural economy, the SHGs must be self sustainable independent from external and (subsidies) and the activities undertaken by the groups must be sustainable for long period of time.

17.2 Padma S.R. and T. Rathakrishnan, 2012. Determinants of Participation of Leaders and their Role Performance in SHG Activities. ***Int. J. Ext. Educ.*** **VIII : 31-36.**

Economic necessity (55.71%) for availing the financial assistance (45.88%) to ultimately improve the social status (44.52%) were the primary factor motivated them to involve in SHGs. Unemployment (41.70%) motivation by friends (38.75%) and to avail the trainings offered by training institutes (38.12%) to gain additional knowledge (37.77%) and also to acquire more skills the specialization (33.59%) The farm women were willing to involve themselves in SHGs. The 87.30% and 84.20% respondent had medium to high level self-confidence and aspiration respectively. Hence these independent factors acted as causal factors to motivate the respondents to join in SHGs. And facilitate the groups to identify appropriate income generating activities for members (50%) organized common action in the village such as tree planting, desiltings of tanks, free medical campaigns, renovation of school buildings (31.70%)

18. Technology Transfer

18.1 Dabrio A. Cidro and Rama B. Radhakrishna, 2007. Usefulness of Information Sources in the Promotion of Hybrid Rice Program in the Philippines. ***Int. J. Ext. Educ.*** **III : 1-10.**

A variety of information sources are used in disseminating information to farmers. The usefulness of information sources – print, electronic, and human is very important to make informed decisions about the effectiveness of each information source. The Hybrid Rice Program (HRP) identified 10 key components for improving

rice production in the Philippines. Of the 10 key components, two were related to information support service and training. In information support service component, promotion of print, broadcast, electronic media, and information campaign were identified as key strategies. The study examined the usefulness of information sources in the promotion of hybrid rice program as perceived by farmers and extension agents. Both farmers (n=237) and extension agents (n=132) responded to a three-section instrument. Data were collected using personal interview method for farmers and hand delivered survey for extension agents. Findings from the study revealed that both farmers and extension agents view electronic media such as radio and television more useful for learning about hybrid rice promotional activities. Leaflets/brochures and demonstration were also rated as "very useful" by both farmers and extension agents. Significant differences were found between farmers and extension agents relative to the usefulness of information sources.

18.2 Rajinder Kaur Kalra and B. S. Hansra, 2007. Dairy Technology Transfer Systems in Punjab : Fostering to Knowledge Empowerment. ***Int. J. Ext. Educ.*** **III : 112-121.**

Dairy farming is one of the core competences of the Nation and the best alternative for diversification in Punjab especially for small and marginal farmers. Being labour intensive, it can produce work for the family throughout the year. It is more eco-friendly, needs low investment and give remunerative prices. The dairy production systems as well as transfer of dairy technology in the country are faced with a number of constraints. Scientific inputs in terms of feed, housing, health care, management and breeding have not reached the end users adequately, thus creating a gap between present practices of dairy farming and the available dairy technology. There is a need to study the existing dairy technology transfer system. The secondary data sources were used to get the information. The State Department of Animal Husbandry provides health services, however, extension services to educate farmers in animal husbandry practices are almost non-existent. As a result, technologies do not reach the majority of small and marginal farmers. Strong and efficient transfer of technology models are therefore, required to strengthen dairy farming.

18.3 Adhikary M. M., S. K. Acharya and A. K. Singh, 2008. Technology Socialization Process in terms of Performing Technology Dissemination System : A Study to Examine Alternative Approach. ***Int. J. Ext. Educ.*** **IV : 48-51.**

In the rubric of diffusion research adoption, rejection, discontinuance etc. are interactively and imbibingly characterizing the whole of technology socialization process The study was thus set and designs to elucidate the vector and velocity of technology socialization process in terms of its fueling inputs like agro-economic indicator. In delineating the research setting the local war selected with contemplation that innovation decision process in a typical vegetable and fruit crop growing area of West Bengal must have characterizations of adoption, rejection, discontinuance, etc. in abundance and with uniqueness.

18.4 Sajeev M. V. and V. Venkatasubramanan, 2010. Technology Application through Krishi Vigyan Kendras : Conceptual Paradigm. ***Int. J. Ext. Educ.*** **VI : 45-54.**

Considering the fact that majority of the KVK scientists are from life sciences background, a project was initiated by Zonal Project Directorate, Zone-III, Barapani, Meghalaya to standardize the Concepts, Methodologies and Approaches for Technology Application and Transfer in KVKs and to popularize the same among KVK staff of the country. The study analyzed technology assessment and refinement data from 43 KVKs of the north eastern states of India for standardizing a new conceptual framework for technology application through

KVKs. The authors developed a new 7 stage conceptual model of agricultural technology development process which delineates the role of KVKs system between research and extension system. The analysis also reveals the typology of technology passages through KVK system before standardizing a conceptual framework for technology application through KVKs. The standardized conceptual paradigm for technology application through KVKs is discussed in this paper.

18.5 Meena M. I. and Dheeraj Singh, 2011. Impact of Front Line Demonstration in Adoption of Improved Cumin Production Technology. *Int. J. Ext. Educ.* VIII : 24-28.

The seed spices constitute an important group of agricultural commodities, playing an important role in our national economy. The export of seed spices together account for 28% in volume and 18% in value of total export of spices. During 2009-10, we have exported 53650 tones of cumin seed, valued at Rs. 560.00 crores. In India, main seed spices growing states are Rajasthan and Gujarat, producing about 80% of country's seed spices. The study was conducted in Pali district of Rajasthan. One panchayat samiti was selected purposely because the maximum number of Front Line Demonstrations on cumin were conducted during last five years in this panchayat samiti. Five adopted villages and five non-adopted villages were selected randomly and sixty trained and sixty untrained respondents were randomly selected for study purpose. Thus, total sample size was 120 consisting of 60 trained and 60 untrained farmers. The results showed that both categories of cumin growers were found in medium level of adoption category. The practices related to cumin production technology, respondents of both categories were found to be high adoptors in irrigation management, time of sowing and seed rate and spacing and least adoption in weed management and physiological aspects. There was a significant difference in the overall adoption of cumin production technology between trained and untrained respondents.

18.6 Rhemiln Z. Relado and Rama B. Radhakrishna, 2011. Assessing the Usefulness of Knowledge Products in the Philippines. *Int. J. Ext. Educ.* VII : 1-7.

Knowledge products (KPs) as a traditional extension delivery method in Phillippine rice agriculture were examined. This study sought to understand the factors that are related to the usefulness of KPs to farmers, extension agents, barangay officials, and Municipal Agriculture and Fishery Council (MAFC) chairs.

The study used concepts from the uses and gratifications theory (U&G theory), non-gratification factors from salient media theories, and sociodemographic variables to examine the usefulness of KPs. The study used a descriptive correlational design and a questionnaire was developed to address the usefulness of KPs. A total of 135 respondents were interviewed from February to March, 2008 in Northern Luzon, Philippines. Of he 135 respondents, 131 were aware and had used KPs.

Study findings revealed that social gratification and content as a non-gratification variable were highly correlated with usefulness of KPs. Contrary to expectation, sociodemographic variables were found to have little or no relationship with usefulness of KPs. With these study findings, three sets of recommendations were made for 1) Policy 2) Actions from PhilRice, and 3) further research.

18.7 Tidke G. R., M. K. Rathod and R. P. Mandve, 2012. Knowledge and Adoption of Farmers about the Management of Pod Borer Complex in Pigeon Pen. *Int. J. Ext. Educ.* VIII : 71-78.

This study was conducted in Kalmeshwar panchayat samiti of Nagpur District. Total sixty farmers were interviewed from ten villages and data were collected regarding knowledge and adoption of farmers about management of pod borer complex in pigeon pea as dependent variables. Knowledge of majority respondents (46.67%) was found at

medium level whereas the adoption recorded low by over half (58.33%) of respondents. To control the pod borer in pigeon pea package of nineteen practices ware recommended by Dr. PDKV, Akola. Threfore in practice wise knowledge and adoption of farmers indicated that cultural, mechanical and physical practices were known to most of the respondents. Some of the farmers partially adopted these practices which could not give effective control of pod borer. Uses of botanical pesticides are also important but its use was not known to more than half of the respondents (up to 56.67%). It was not also adopted by 70.00 percent respondents. In relational analysis education, annual income, extension contacts and innovativeness were highly and significantly correlated with knowledge and adoption of farmers. Knowledge was also positively and highly significant with adoption of management practices of pod borer in pigeon pea.

18.8 Sabita Mishra and H. K.Dash, 2013. Gender Gap in Access to Extension Services : A Case Study. *Int. J. Ext. Educ.* IX : 51-55.

The study was undertaken in model village (Giringapur) of Bhubaneswar block in Khurda district of Odisha which has been adopted by DRWA to identify the gender needs of extension approach in agriculture and allied area. A total of 80 respondents (farm women – 40 and men – 40) were selected for the study. The findings revealed that there was significant difference between women and men while considering extension approaches and the preference need in the areas of message and it was due to prevailing socio-cultural barriers, family attachment, restricted mobility, less time availability, triple responsibility and lack of decision making power with women. Therefore, the change agents should be utmost careful in analyzing the socio-cultural environment of gender to formulate action plans for gender mainstreaming in agriculture extension.

18.9 M. L. Meena, 2014. Adoption Level of Camel Farming Practices in Arid Zone of Rajasthan, India. *Int. J. Ext. Educ.* X : 176-180.

This study was conducted in Pali district which was purposively selected for the study as the first phase of the project was in operation only in this district. The sample size was limited to 200 participants and 100 non-participants considering the time and other resources available for the study. The findings of the study that 46.50 and 40.00 per cent of the participants farmers were in the medium and high levels of adoption of recommended practices respectively, whereas 51.00 and 43.00 per cent of non-projected area were in the medium and low levels of adoption, respectively. The extent of adoption of project area was strikingly more than that of the non-projected area and there existed significant difference between the two groups. In the case of non-project area, majority of them were non-adopters of various recommended practices except in practices such as period of grazing and feeding of tree leaves in summer. Majority of the project area expressed that the reason for non-adoption of recommended practices were lack of knowledge, non-availability of inputs, lack of time and lack of veterinary services.

18.10 Wasnik S. M. and K. R. Kranthi, 2014. e-Kapas: An ICT Enabled Tool for Dissemination of Cotton Production Technologies. *Int. J. Ext. Educ.* X : 136-140.

Information and communication support for cotton farmers during last 63 years has mainly been conventional through extension personnel of Department of Agriculture and that was mostly been manual. This approach has not been able to reach majority of the cotton farmers spread across the country. To reach over 12 million hectare farms spread over ten states is an uphill task. Further, the needs of cotton farmers in these states are much more diversified and the knowledge required to them is beyond the capacity of the grass root level extension functionaries. Hence in order to speed up the dissemination of cotton production technologies from research system to end users, a novel extension mechanism of 'e-kapas' networking of farmers has been initiated by Central Institute for Cotton

Research, Nagpur aiming to empower cotton farmers with knowledge. CICR has thus designed programme to cover more than 1,00,000 farmers across the cotton growing states by involving seventeen centres including SAUs working on cotton through mobile based advisory services. The seventeen partners including CICR, Nagpur (Maharashtra) as Lead Centre and other centres viz. CICR Regional station, Coimbatore (TN); CICR Regional station, Sirsa (Haryana); UAS Dharwad (Karnataka); GAU Junagarh (Gujarat); MPAUT, Banswara (Rajasthan); RAU, Sriganganagar (Rajasthan); ANGRAU, Lam Guntur (A.P.); NAU Surat (Gujarat); CCSHAU, Hisar (Haryana); PAU, Faridkot (Punjab), PDKV, Akola (Maharashtra); OAUT, Bhawanipatnam (Orissa); RVSKVV, Khandawa (MP); MAU, Parbhani (Maharashtra); MPKV, Rahuri (Maharashtra) and UAS, Raichur (Karnataka) are catering to the famer's needs in local regional languages. By using modern ICTs and establishing a strong linkages between research and technology 'e-kapas' system provides an excellent opportunity to reach far and wide spread clientele very quickly with advance viable information and helps in creating and sustaining significant changes in the productivity and profitability.

18.11 Noorjehan A. K. A. Hanif, 2014. Technological Gap in Adoption of Recommended Reclamation Practices in Sodic Soils of Tiruchirappali District in Tamil Nadu. ***Int. J. Ext. Educ.*** **X : 105-110.**

About 2.5 million ha in India and 0.47 million ha in Tamil Nadu have been affected solely by sodicity which affects productivity of the land directly. An expost-facto research was undertaken with a specific objective to assess the technological gap and constraints faced in adoption of reclamation practices in sodic soil by the farmers of Tiruchirappalli district in Tamil Nadu as the farmer were facing lower productivity. Survey of 100 farmers was conducted in five different villages of Manikandam block where sodicity of soil are higher using interview schedule and direct interview method. The findings revealed that the overall technological gap in adoption of recommended reclamation practices in Sodic Soil is found to be medium (93.00%) and that the highest technological gap was notices for the practices dosage of spent wash, application of mineral amendments, dosage of application of Zinc sulphate, quantity of additional Nitrogen and number of splits of addition nitrogen. The overall technological gap of the respondents is significantly correlated at 1 per cent for the variables educational status, sodic soil, sources of information, economic motivation, scientific orientation, innovativeness and attitude towards group activity. The major constraints faced by cent percent of the respondents in adopting the recommended reclamation practices in sodic soil are small fragmented land holdings, drainage problem, non-availability of suitable varieties and seeds during sowing, lower market value of TRY (TNAU) 3 variety, labour shortage and erratic monsoon or poor rainfall. The farmers in the study area suggested to encourage for cooperative farming, provide timely input subsidy. Agricultural department officials should boost up the farmers for farming, agricultural information should reach all the farmers and arrange awareness camps in nearby villages around the Institutions / department and provide all the information to the villages.

18.12 Chandan Kumar Panda, 2014. Information Sources and Technology Adoption by Farmers: An Empirical Study in Mohanpur Block, West Tripura. ***Int. J. Ext. Educ.*** **X : 80-87.**

The present study was conducted at Kamalghat Gram Panchayat area of Mohanpur R.D. Block in West Tripura district during July, 2012 to December 2012 with the following objectives (i) to study the socio-economic profile of the farmers (ii) to find out the interrelationship amongst the predicted and predictor variables and (iii) to suggest some measures for better farm technology adoption. It is concluded that the respondents were well distributed or age most of them belonged to

Scheduled Caste families; nuclear family type was in rising trend; most of the houses was kacha, till now forming remain the livelihood of least educated people; average land holding of the respondents was 0.62 ha; crop husbandry and animal husbandry were predominant pattern of livelihood. It was also noted that sources of information had strategic effect on adoption of farm technology; socio-economic factors were interrelated and family size and family types had more impact impact on others socio-personal variables factors outcome. The farm technologies adoption in agriculture and allied sectors were predictive by socio-personal variables, but more contribution expected to be from gross annual income and sources of information.

18.13 Shanmugasundaramt B. and Helen S., 2014. Variations in Adoption of System of Rice Intensification in Kerala. ***Int. J. Ext. Educ.*** **X : 73-75.**

The present study was undertaken to analyse the variation in adoption of System of Rice Intensification in Kerala. An ex-post-facto research design was followed for the study conducted in selected three districts of Kerala. A total of 200 adopter categories representing small, medium and large farmers were taken as sample. The sample categories under the study comprise the beneficiaries of System of Rice Intensifications (SRI) scheme implemented under various projects. Data collection was done through interview method. The area under SRI out of the total paddy area among adopter categories was nearby half in Rabi season. More than half of the farmers have adopted SRI continuously for 3 years without change in area. Nearly one-third of the farmers have not adopted SRI continuously for the last three years. With respect to nutrient management majority of the farmers adopted both organic and inorganic fertilizers. Variation in adoption was seen with respect to adoption of SRI cultivation. Under full adopter category more than three fourth of the respondents adopted single seedling planting, use of mat nursery, planting 8-12 days old seedling and square planting. Adoption of correct seed rate and application of organic manure was also not followed by more than half of the farmers. However, under non-adoption category it was seen that nearly one-third of the farmers did not adopt correct seed rate.

18.14 Chandra Shekar S., R. Bahal and K. Bhagya Lakshmi, 2014. Effectiveness – Agri Clinics in Promoting Paid Extension Services among Farmers. ***Int. J. Ext. Educ.*** **X : 27-33.**

The study conducted in Uttar Pradesh villages on the farmers' perceived effectiveness of paid extension services provided by Agri Clinic entrepreneurs, it was found that the effectiveness index scores were high among the beneficiary farmers. About fifty per cent respondents perceived that the paid extension services were moderately effective while the rest perceived them to be highly effective. Among the correlate, annual income, social participation, farm machinery owned were negatively and significantly associated, while family type was positively and significantly associated with effectiveness index scores. Regression analysis of effectiveness index scores revealed the positive contribution of age, education, farm size and negative contribution of farming experience, annual income and social participation. Among the four components, the contribution of extent of adoption and farmers' satisfaction was very high in farmers perceived effectiveness of paid extension services provided by Agri Clinic entrepreneurs.

18.15 Daniel O. Osewe, W. Ochola and P. B. Kharde, 2014. Influence of Study Circle Extension Strategy on Technology Dissemination in Kenya. ***Int. J. Ext. Educ.*** **X : 14-18.**

Agriculture extension workers in various countries adopt various strategies to disseminate technological information farmers so that they can improve their livelihood. One such extension strategy, study circle (SC), was introduced in Kisumu Country Kenya by Livelihood Improvement and Family Empowerment (LIFE)

Project in 2002 to dissemination Dairy Goat Technologies (DGTs). The present study investigated the influence of SC extension strategy on dissemination of DGTs among smallholder farmers in the Country. Data was gathered using a pretested questionnaire administered to 110 respondents consisting of 50 SC and 60 Non Study Circle (NSC) farmers which were obtained by stratified random sampling technique. Data was subjected to Chi-square test (X2) in draw valid inferences. Analysis was done using Statistical Package for Social Sciences (SPSS) Version 11.5 program. Dissemination was measured using index developed for the study. The index ranged between 0 (no dissemination). 1 (low dissemination), 2 (medium dissemination) and 3 (high dissemination). It was observed that farmers under SC performed better than NSC farmers. Non Study Circle participants had low dissemination (1.16) while Study Circle participants had medium dissemination (2.13). The study has, therefore, made a contribution to the practice and principles of participatory extension in Kenya and is thus recommended. The study can be adopted by extension agents, farm scientists and government policy makers in re-formulating participatory extension strategies to improve the existing conventional approaches and up-scaling agricultural technologies transfer not only in Kenya, but also in other parts of the World.

18.16 Jebapreetha D. and Rexlin Seivin, 2015. Adoption of Recommended Grape Cultivation Practices. *Int. J. Ext. Educ.* XI : 105-109.

The study on adoption of recommended grape practices was conducted in Thent and Dindigul districts of Tamil Nadu by employing a combination of purposive and proportionate random sampling method with 150 grape growers. The data were collected with the help of a well-structured and pretested interview schedule. The findings revealed that out of the 25 practices considered for the study. 16 practices were adopted by all the respondents, whereas the remaining nine practices were not adopted by majority of them. The less adopted practices are soil analysis (74.00%), spacing (54.67%), pit filling mixture (62.00%), manure (98.00%), fertilizers (97.00%), disease management (98.70%), insect management (98.70%), weed management (97.00%) and time of harvesting (98.78%). Lack of technical knowledge, lack of education on keeping the environment safe, lack of awareness on various forms of toxicity of pesticides and chemicals and health hazards were also some of the main factors that influenced the less adoption of recommended package of practices. Hence, it is the need of the hour to educate the grape growers for improving the level of adoption in the study area.

18.17 Shinde P. B., Dr. P. R. Deshmukh, Dr. R. D. Ahire, 2015. Knowledge and Adoption of Recommended Seed Production Technology by the Soybean Growers. *Int. J. Ext. Educ.* XI : 86-89.

The present study was conducted in Parbhani district of the Marathwada Region of Maharashtra state. Parbhani district consist of 9 talukas out of these nine talukas three talukas were selected randomly. From each taluka four villages were selected list of the soybean seed growers in Parbhani district were obtained from Mahabeej Office Parbhani. Thus 12 villages were selected for present study. The list of the seed growers of soybean crops in Parbhani district were obtained from Mahabeej Office Parbhani and ten soybean seed production growers from each village were selected randomly thus 120 respondents were selected randomly by following lottery method from selected villages they were interviewed, personally to collect the data with the help of structured interview schedule. The collected data were processed and statistically analyzed. The independent variables, namely age, farm experience, education, annual income, social participation were highly significant and positively, whereas sources of information, risk orientation and extension contact were significant and positively related. The independent variables namely age,

farm experiences, education, annual income, land holding, social participation, and risk orientation, sources of information, economic motivation and extension contact were significant and positively related with the level of adoption of recommended seed production technology of soybean seed growers.

18.18 Sunita Kushwah, Kumari Sharda and Raghubar Sahu, 2015. Front Line Demonstration – A Tool to Increase Paddy Production. ***Int. J. Ext. Educ.*** **XI : 59-61.**

The field experiment was carried out as a front line demonstration on 110 ha area of paddy cultivar Sahbhagi. The productivity of paddy crops continues to be quite low due to irregular and late onset of monsoon in Banka district since last one decade. The yield of paddy crop can be increased by the demonstrating such type of cultivars at the farmers field under the supervision of scientists working in operational area. The importance of variety delivered through front line demonstration, to popularise new drought tolerance paddy variety, a demonstration with improved cultivation practices was conducted at the farmers field during the year 2012-13 and 2013-14 and achieved the expected yield. Average percentage increase in the yield over the local check was recorded 60.3 per cent. An average B:C ratio for first & second year was obtained 1.71:1, for demonstration and 1.26:1 for local check. This cultivar was demonstrated among farmers field as a contingent crop for getting good production.

18.19 Dympep A. and S. S. Dolli, 2015. Agricultural Extension Delivery System at Grass- root Level in Karnataka : Time Utilisation Pattern, Constraints and Suggestions. ***Int. J. Ext. Educ.*** **XI : 54-58.**

A demand driven extension system at thegrass-root level called Raitha Samparka Kendras (RSKs) were established in Karnataka state of India in theyear 2000 replacing the earlier T&Vsystem. The study was conducted in Gadag district of North Karnataka of which six agricultural officers (AOs) and twenty-five assistant agricultural officers (AAOs) of the RSKs were selected. It was found that the AOs utilised most of their time attending meetings and trainings while the AAOs time were mostly consumed for input distribution. The AOs of the RSKs planned extension activities at'pre-season 'and 'when required'. Non- availability of information and input at the needed time from the sources were the major constraints faced by the extension personnel of RSKs.

18.20 Sarvesh Kumar, S. R. K. Singh, R. C. Sharma, 2015. Field Potential in Wheat by Application of Improved Production Technology : A Case of Harda District, Madhya Pradesh. ***Int. J. Ext. Educ.*** **XI : 23-27.**

The rapid growing population of India will need 35-37 million metric tonnes more food production by 2020. India produced 264.38 million tonnes of food grains during 2013-14. This is more than 7 million tonnes higher than the production last year. Present study was conducted in Harda district of Madhya Pradesh during 2013-14. Production of 14.5 million tonnes of wheat in the fiscal year 2011-12 and 16.5 million tonnes in 2012-13. The total food grain production of Madhya Pradesh is 276.20 lakh MT, which comprised 10 per cent of the India's food grain production at present time. To achieve this projected target, the adoption of latest production technologies is must, particularly in major crop i.e. wheat. KVKs are being established with the mandate of technology assessment, refinement and to disseminate on farm tested-proven technologies with appropriate modulations in location specific problems and concerns on the prevailing natural and socio-economic conditions, needs and priorities. In present study, extents of adoption of eight selected improved wheat production technologies were measured. To measure the extent of adoption and to compare the impact of training on extent of adoption, 150 farmers who had received training randomly selected and the same number of farmers was selected from surrounding area that

had not been trained. Study was conducted in three different ways-firstly; all farmers were interviewed and categorized in to three groups of high, medium and low category of farmers for adoption of improved wheat production technologies. Secondly, overall adoption for both categories of farmers was measured and finally difference between the adoptions of both categories of farmers was considered in terms of adoption of different practices of wheat production. High level of adoption was seen in adopting high yielding varieties seed of wheat (62.00 per cent in trained groups) and medium level (58.67 per cent in untrained groups), whereas overall adoption of improved wheat production technology by farmers was under medium adopters category in Harda district of Madhya Pradesh.

18.21 Osewe, D. O., Kipsat, M. J. and Ochola, W.O., 2015. Situation Analysis of Agricultural Information Dissemination: Implication for ICT application among Smalholder Dairy Farmrs in Nyamira Country, Kenya. ***Int. J. Ext. Educ.*** **XI : 4-5.**

Information and Communication Technology (ICT) is a key media for transforming farmers 'lives through convenient agricultural information access and sharing knowledge. This paper analyses situation of agricultural information dissemination and its implications on transforming smallholder dairy farmers in Nyamira County, Kenya. Emphasis is given to ICT visa-vi print and traditional methods. Field research was conducted in Nyamira County between May and July, 2015 involving 220 dairy farmers. The respondents were identified through systemic sampling technique. Interview schedule was used for data collection. Traditional media (70.6%) were the main source of agricultural information followed by electronic (52.0%) and print media (47.4%). These findings corroborates the fact that ICT application was not being embraced as expected, being the world's most common way of transmitting voice, data and services in the developing world. Farmers were therefore, not benefiting from interactive and real-time delivery of agricultural information that would enable them benefit from this current technological advancement.

18.22 Tekale V.S., M.H. Pimpalkar, Vidya V. Tayde, 2016. Adoption of Organic Farming Practices by the Vegetable Growers. ***Int. J. Ext. Educ.*** **XII : 91-95.**

The present investigation was carried out in Wardha and Samudrapur talukas of Wardha district in Vidarbha region of Maharashtra State. It was revealed that most of the respondents had complete adoption of practices namely, use of neem seed kernel extract (76.00%), use of neem based insecticides (66.00%), use of insect, pest and diseases, free and resistant varieties (64.00%). use of jivamruit (64.00%), improved soil fertility by adding vermicompost (62.00%), weed management (60.00%), application of FYM / vermicompost (61.00%) use of plant biomass (59.00%), use of amritpani (52.00%) and use of multiple cropping (52.00%). The respondems were adopting practices use of green manuring crops like sunhemp, dhaincha, glyricidiakaranjetc (33.00%) and use of trap crop (29.00%). Tire majority of respondents were not adopting poultry manure (88.00%), crysopa (88.00%) non-edible oil cake (83.00%), use of Beauvaria bassiana (82.00%), use of Verticilium sp. (74.00%), use of Tricodemaviridi and use of pheromone trap, light trap (66.00%), respectively. The majority of the vegetable grower were mediocre in respect of adoption behavior of organic farming. It again include a scope for improvement of adoption behaviour of farmers about organic farming through imparting knowledge and motivating the vegetable growers through demonstration: There is need 10 organize awareness campaigns and training programmes to encourage the vegetable grower for adoption of organic farming practices and more become economically independent and it will improve nutritional status of farm family, these indirectly better their the socioeconomic status.

18.23 Laxmipriya Pradhan, B. Parasar and P. Das, 2016. Factors Contributing to Up-Scaling and Limiting the Mushroom Enterprise.

Int. J. Ext. Educ. **XII : 68-71.**

Mushroom cultivation is an important agro-based enterprise for the farming community of Odisha. Always we thought that scientific technology can only contribute towards higher production and productivity and on the other hand profitability is the key factor which can encourage the farmer to upscale the enterprise as well as the fellow farmers to accept the enterprise. Sometime even though the production technology is potential enough to achieve higher production, sustainability of the enterprise is highly affected in absence of other ancillary factors. The present study assesses the factors contributing up-scaling and limiting the mushroom enterprise. The study reveals that Market demand has been recognized as the primary factor to predict profitability of the enterprise and un-stable market; marketing network, reducing yield potential of spawn, high perishability of the commodity and reducing yield due to continuous cropping are the most important factors for limiting the mushroom enterprise.

18.24 Sreenivasulu M., V. Sudha Rani and K.S. Purnima, 2016. Adoption of Cottom ICM Practices by FFS and Non FFS Farmers in Andhra Pradesh. ***Int. J. Ext. Edu.*** **XII : 28-31.**

The agriculture services in the country are in the process of reorientation of their development strategies towards supporting farmer empowerment. One method of empowering farmers and their capacity, building is through Farmers Field School (FFS). Participatory extension approaches such as farmer to farmer extension and FFS encourage farmers to utilize their resources, own knowledge, skills while integrating new expertise, enhance farmers position as manager of their own land and resources. FFS empowered to build up their self-confidence and self-reliance. It also ensure empowering the farmers to take up economical decision in adopting practices of integrated crop management (ICM). The study revealed that 55.55 per cent of FFS farmers were in the medium adoption category about cotton I.C.M. practices followed by 23.88 per cent high and 20.55 low. In case of Non FFS farmers' majority (46.11%) were in the medium adoption category followed by low (32.77%) and high (21.11%) adoption of cotton ICM practices respectively.

18.25 Mishra G. R., D. P. Swain and B. C. Das, 2016. Knowledge Level of Dog Owners towards Rabies Prevention and Control. ***Int. J. Ext. Educ.*** **XII : 19-23.**

Rabies is a viral disease of all warm blooded animals which causes acutefatal encephalitis, with almost 100per centfatality rate. This disease occurs in more than 150 countries and territories and about 55,000 people die of rabies every year, mostly in Africa, Asia, and South America. Worldwide, dogs are the source of 99% of human rabies deaths (WHO, 2010). Canine rabies is endemic and occurs throughout the year in all parts of India causing heavy mortality of human beings. To know the knowledge level of dog owners related to rabies and their preparedness, a study was conducted with 100 respondents in Bhubaneswar city. Structured questionnaires were prepared and administered to dog owners by face to face interview. The study revealed that majority of the dog owners (86%) were aware that rabies can be spread through the saliva of a rabid animal. But, majority of respondents (89%) did not know the age for first vaccination of dogs against rabies. Dog owners who were public servants were having good knowledge about rabies than those of other occupation groups. Female dog owners do have less knowledge as compared to their male counterparts. Inadequate knowledge of some aspects of rabies, negative attitude and practice of dog owners towards rabies put the dog owners in high risk of exposure to the fatal disease. There is, therefore a need for educational programmes targeted at dog owners to increase their level of knowledge and reduce the risk of exposure to rabies.

18.26 Chandre Gowda M. J., 2016. Potential of Mobile Advisories in Agricultural Extension Services. ***Int. J. Ext. Educ.*** **XII : 14-18.**

In an attempt to use the mobile phone platform for providing information support to farmers. Ministry of Agriculture, Government of India launched the Kissan SMS Portal in July 2013. A telephonic survey was conducted to ascertain the utility of test and voice messages sent from Krishi Vigyan Kendras (KVKs) using the portal. Abut half the farmers registered to receive SMS could not be contacted during telephonic survey due to out-of-coverage and no-response from farmers. Results revealed that wider reach could be achieved through text messages, but voice messages were effective in making farmers to understand and act upon. Most farmers shared messages with other farmers resulting in horizontal spread of information. Customized advisories could enhance the utility of the messages. As customization needs to be addressed at different levels, it requires convergence. Majority of the farmers want the services to be continued, an indication of utility of mobile advisories in farming operations and activities.

18.27 Bellol, O.G., Oiadipo, F.O., Kareem, O.W. and Osewe, D.O., 2016. Assessment of Farmers Processing Technologies and Utilization of Pearl-Millet (Pennisetum Glaucum) Cultivation in Jigawa State, Nigeria. ***Int. J. Ext. Educ.*** **XII : 1-5.**

The study examined the farmers processing technologies and perceived economic utilization of Pearl-Millet cultivation in Jigawa State, Nigeria. One hundred and sixty millet farmers were interviewed for the purpose of eliciting information for the study. The millet farmers were males (79.4%). married (73.1%), Muslim (94.3%) with no formal education (60.0%). 91.3% were within the age range of 21-40 years, household size of 6-10 persons (73.8%) with average monthly income of #1-10,000 (USD0-32.79) (86.3%). Most available technologies for millet utilizations are soaking/cooking and traditional/bioprocessing (98.1%) while thermal improved processing was not really felt (412%). Key and most perceived economic utilizations were production of Fura (cooked millet product), Tuwa, Kunu (98.1%) seconded by Ogi (uncooked raw palp), Koko or Akamu (96.9%) among others useful. Major constraints were lack of capital and storage facilities/technologies (97.5%) followed by nomadic Fulani, lack of improved processing skills, weed infestation, processing equipment and extension contact (each being 93.8%) to advocacy (75.6%). The study recommended that government at state and local level tiers should strengthened the extension service delivery by employing more personnel with adequate training to improve the gap of farmers to extension agent contact in the study area. Improved and high yielding varieties of millet should be introduced to farmers with current technologies if any on millet production and utilization.

18.28 Satyendra Singh an H. M. Singh, 2017. Impact of Technology Dissemination through Demonstration (TDTD) on Yield and Economics of Rabi Onion Crop in Kurnool District AP. ***Int. J. Ext. Educ.*** **XIII : 104-106.**

Onion production and post harvest management problem and their solution studied with onion growers of Kurnool district of Andhra Pradesh through planned Technology dissemination through demonstration (TDTD) were conducted on farmer's field with Rabi onion variety Agrifound Light Red (ALR)and Trichoderma viride (TV)application in nursery sowing a seed dressing and spray since 2011-12 to 2015-16 for five years. Result of study indicated good performance over check recorded since five years and maximum per cent over check was recorded 23.39%, technical gap was noticed 64.30 qt/ha with decreasing trend, maximum extension gap recorded 56.62 qt/ha while minimum technology index 12.62% in same year. The maximum gross return, net return and B:C ratio was recorded highest in 2014-15 due to maximum market priceas compared with all study seasons.

18.29 Galande P. S., M.C. Ahire, J.M. Patil, 2017. Extent of Information Processing Behavior of Dryland Farmers. ***Int. J. Ext. Educ.*** **XIII : 95-99.**

In case of evaluation of information oftenly by evaluating farm experience was rank first. By discussion with friends, discussion with family members and discussion with progressive farmers were ranked second, third and fourth in case of oftenly evaluation of information. In case of occasionally evaluated information by discussion with extension officers was rank first and by taking demonstration on ownfield at second rank. In case of never evaluated information by discussion with agriculture officers was rank first. In case of oftenly information storage by memorizing, practicing the method and preserving printed material. Occasionally information stored by creating file / documents and writing in daily diary. Farmers never store the information by creating CD's and by capturing photographs. In case of often transformation of information by discussing the self-experience was rank first and by normal conversation rank second. Occasionally transformed the information bydiscussing in local meetings and conveying to local members atfarm or at home. In case of never transformed the information by distributing preserved leaflet and by training / seminars.

18.30 Rathod M. K., S.B. Kad and N. R. Koshti, 2017. Adoption Behaviour of Farmers towards Bio-Fertilizers in Paddy. ***Int. J. Ext. Educ.*** **XII : 68-71.**

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 observed that majority of respondents (83.33%) had medium level of knowledge regarding bio-fertilizers while 69.16 per cent respondents had medium level of adoption of bio-fertilizers in paddy. 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. 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 bio- fertilizers at local level were the major constraints faced by the farmers in study area.

18.31 Dhiraj Kumar and Nirmal Singh, 2017. Information Access and Use Pattern of Dairy Farmers of Punjab. ***Int. J. Ext. Educ.*** **XIII : 52-56.**

The present study was carried out with the objective to assess information use and access pattern of dairy farmers of Punjab. A special emphasis was laid on the usage of mobile services, information programmes. TV programmes, etc. to access information. An effort was made to ascertain the level of satisfaction with the information literacy competencies and the problems being faced by dairy farmers in accessing and using information related to animal husbandry. Data were collected from farmers during their visit to the Kisan Mela held at the campus of Guru Angad Dev Veterinary and Animal Sciences University (GADVASU), Ludhiana on 20-21 March, 2015 using questionnaire as a tool. Health of animals was found to be the prime motive of seeking information by dairy farmers with more than 90% of the respondents looking for information for this purpose. However, only a fraction of the respondents were fully satisfied with their information literacy competencies.

18.32 Syed Shakir Ali, N. R. Koshti and P. K. Wakle, 2017. Factors Influencing Knowledge and Adoption Level of Sericulturists in Cluster Promotion Programme. ***Int. J. Ext. Educ.*** **XIII : 46-48.**

Central Sericulture Board together with Directorate of Sericulture, Maharashtra implemented Cluster Promotion Programme (CPP) throughout the years 2007-10. The present paper analyses the factors influencing the knowledge and adoption level of sericulturists participated in CPP in Osmanabad district. In all total, a hundred and fifty sericulturists were selected by "probability proportionate sampling size technique" from eight

tluka covering twenty five villages. Information was collected by personal interviews with sericulturists. The findings discovered that out of 15 variables, regression coefficient for three variables namely education (2.3910), cosmo politeness (2.5217) and extension contact were significant at 5 per cent level of significance whereas economic motivation (3.9308) and innovativeness (7.2898) were significant at 1 per cent level of significance and are key factors influencing knowledge level of sericulturists. It was further revealed that out of 16 independent variables regression co-efficient for 7 variables namely family size (4.2316), cosmo politeness (3.7382), economic motivation (2.5978), attitude towards sericulture (3.5257), innovativeness (5.8339), area under mulberry (3.7891) and annual income were significant at 1 per cent level of significance and are key factors influencing adoption level of sericulturists.

18.33 Rathod M. K., P. G. Khambalkar, S. G. Parshuramkar and N. R. Koshti, 2018. Adoption Behaviour of Paddy Growers about Soil Testing. *Int. J. Ext. Educ.* XIV : 113-119.

The present study on adoption behaviour of paddy growers about soil testing in Bhandara District was undertaken in Bhandara district of Vidarbha region of Maharashtra State with sample size of 120 respondents from 12 villages. Data were collected on personal, socio-economic, situational, communicational and psychological profile of farmers towards adoption of soil testing was certain by using exploratory design of social research. Data were collected in face to face situation on a pre-structured interview schedule. It was revealed that, more than half i.e. 56.60 per cent respondents had full knowledge of meaning of depth of sampling and 52.50 per cent respondents had full knowledge of meaning of soil testing. Regarding attitude, majority of respondents found strongly agree with use of soil testing helps to maintain the fertility of soil (52.50%) and soil testing is a simple and easy to adopt technology in paddy (44.16%). Tire result showed that dependent variable knowledge had medium to low level of knowledge, most of the farmers found to have moderately favorable attitude towards soil testing and a medium to high level of adoption about the soil testing. There is need to organized awareness compaigns and arrange trainings, front line demonstration, different extension activities to encourage paddy growers and make favorable attitude towards adoption of soil testing.

18.34 Papanna N. , M.S. Nataraju and Preethi, 2018. ICTs for Enhancing Agriculture Income. *Int. J. Ext. Educ.* XIV: 94-98.

Information and Communication Technology (ICT) is one such important tool to help the farmers in doubling their income from agriculture as well as to communicate information to a large number of people in shortest time. ICTs should not be treated as a luxury to privileged few but treated as critical tools to the people across the country as they bring new ways of doing things and instruments that can reduce farmers transport costs, facilitate commodity trade thereby increasing agriculture production and income and contributing to poverty eradication. The Important services that can be provided through ICT are e-marketing, e-education, e-extension, e-commerce, kisan call centres, forecasting weather information, providing up to date package of practices and other information to farmers, early warning system about disease/pest incidence. In the field of agriculture too, ICTs can play an important role in disseminating, information. Prevailing important ICT tools are AGRISNE, Digital green, e-sagu, e-krishi portal, IKSI, Agmarknet, ikisan, Digital media.

18.35 Deorukhakar A. C., S. R. Bagade and J. M. Talathi, 2018. Doubling the Income of Farmers through Rejuvenation Technology in Mango Orchards in Konkan Region of Maharashtra (India). *Int. J. Ext. Educ.* XIV: 59-68.

Mango is an important rainfed horticultural cash crop of Konkan region. There are several reasons for the low productivity and quality of

mango which are eing compensated by adopting rejuventation technique. Large number of mango orchards in the age group of 40-60 and above have either gone unproductive or showing marked decline in productivity. Rejuvenation is the process of pruning and management of the plants to make them productive. India having 2.209 million ha area under mango crop with production of 186.3 lakh MT with productivity 8.44 MT/ha. Maharashtra contributed 7.34 per cent share in area and 2.48 per cent production in 2015-16 (NHB database 2015-16). In Konkan region the area of about 0.17 million ha is under mango cultivation, but production is only 1.34 MT with productivity of about 2.07 MT/ha. Most of the orchards are above 50 years age which gives very low yield. The height and canopy of these old trees is very high and due to long spreaded branches harvesting of the fruits is a major problem to the farmers. Similarly, spraying of insecticides and pesticide in also difficult and time consuming. There is huge scope to increase productivity by rejuvenation of old mango plantation. In Konkan region of Maharashtra state, mango is grown mainly in Ratnagiri and Sindhudurg districts. Most of the mango orchards in this region are very old and there productivity is also low. Therefore, this study was conducted in this region during the year 2016-17. The sample of 60 non-rejuvenated and 60 rejuvenated orchards having 40 to 60 years age were selected randomly. The per hectare yield of non rejuvenated orchard was 32.24 q. while per hectare yield of rejuvenated orchards was 61.55 q. The benefit cost ratio was 1.18 for non rejuvenated mango orchard and that of rejuvenated mango orchard it was 1.35. It shows that per hectare incremental yield was 29.31 q. and incremental net-returns were 53,189/-. Similarly, per hectare saving in expenditure onlabour for spraying and harvesting of fruits was 32.26 per cent. The constraints regarding rejuvenation practice were also analysed. The farmers are psychologically not prepared as during the initial period of 1 to 3 years after rejuvenation the yield levels are very low. There is a need to motivate the farmers to adopt this practice by providing them technical know how and showing demonstrations.

18.36 Pennobaliswamy G. R., B. K. Narayana Swamy and N. Nagaraja, 2018. Indicators Contributing to the Performance of Krishi Vigyan Kendra for Sustainable Development. ***Int. J. Ext. Educ.*** **XIV : 55-58.**

The study was conducted to evaluate the work performance of Krislri Vigyan Kendra (KVKs) in Zone-VIIIusing ex-post focto-research design. Forty three indicators were identified by following Logical Framework Approach (LFA) and questionnaire was developed to measure the performance. The findings reported 17 performance indicators such as problems addressed based on district diagnostic team suggestions (9.24%), approach in educational activity (8.60%), training impact (6.82%), training rationale based on Non Governmental Organizations (NGOs) and line departments (6.22%), On Farm Test feedback (6.12%), training modules developed for rural youth and farmer (5.82%), functioning of Scientific Advisory Committee (SAC),front line demonstrations conducted, training facility in KVK, training rationale based on farmers demand, human resource development, action taken on SAC decisions, physical facilities, irrigation infrastructure, training of rural youth, impact of Front Line Demonstrations in neighboring villages, total irrigated area of KVK farm. These 17indicators are contributing up to84.65 per cent variance in the performance of KVKs in Zone-VIII. Mandatory activities of KVKs are uniform throughout the country and these factors contributing to the performance of KVKs in Zone-VIIIcan also hold good to KVK in other Zones of India.

18.37 Patil S. D. and S. M. Nalawade, 2019 Dimensions and Determinants of Farm Mechanization in Irrigated Area of Western Maharashtra. ***Int. J. Ext. Educ.*** **XV : 140-148**

Agricultural mechanization is the use of

various power sources and improved farm tools and equipment. However, all the farmers may not utilize the improved farm implements at the same time and at the same range. The study seeks to know the extent of knowledge and utilization of farm implements by the farmers and the factors which determine knowledge and utilization of farm implements in irrigated area of Western Maharashtra. The findings of the study showed that, in irrigated area, majority of the respondents were in the middle age group. literate, had moderate farming experience, lived in joint family, having favourable attitude towards the farm implements, medium annual income, used all sources of information in moderate to high extent. In knowledge context, more than three fourth of the respondents had medium knowledge of farm implements, followed by high knowledge, low knowledge and very high knowledge. Regarding the utilization, about half of the respondents had medium utilization level, followed by high utilization, low utilization, very low utilization and very high utilization. From the correlation it is found that the levels of education, family type, size of family, attitude, cropping pattern, implement possession, size of land holding, annual income and sources of information increased then the knowledge of the respondents about the farm implements too increased. Majority of the respondents had used all sources of information. Extension education methods like agricultural exhibitions, print media are important source of transfer of technologies and played have important role in creating awareness about the implements.

18.38 Prabhu H. Nayaka, K. A. Shah, C. K. Timbadia and Alpeshkumar V. Lad, 2019 Sustainable Solution for Vegetable Waste Generated at Navsari District – A Case Study. *Int. J. Ext. Educ.* XV : 112-115.

The purpose of writing this script to know the current practices related to the various waste management initiatives taken in Gujarat, India by the farmers for their socio-economic development. In Navsari, especially Agriculture Produce Marketing Committees (APMC) yard tonnnes of vegetable wastes produced every day. It adds to waste for market. These wastes are useless and produce unhygienic conditions in and around the city. But by processing in systematic way ill an eco-friendly manner these vegetable waste materials can be converted to commercial viable products. Two youths in Navsari district left their job and started thinking about tile agriculture especially, soil health and organic farming. Later they started collecting vegetable wastes and started bio-processing it and standardized their own decomposing procedure. The young farmer in the village "Sarpore-pardi" has set confidence among the rural youths to take up an innovative venture as well as they protected the environment.

18.39 Sreenivasulu S., P.S. Sudharkar, Y. G. Prasad, J. V. Prasad and J.V.N.S. Prasad, 2019. Climate Resilient Technologies for Drought Mitigation in Chittoor District, Andhra Pradesh, India. *Int. J. Ext. Educ.* XV : 88-96.

Krishi Vigyan Kendra (KVK) under tire administrative control of Rashtriya Seva Samithi (RASS) is implementing the National Innovations on Climate resilient Agriculture (NICRA) project at Chittecherala village, Chinnagottigallu mandal, Chittoor dist., Andhra Pradesh, India. The objective of the project is to enhance the resilience of agriculture and allied sectors to climate vulnerabililies through improved production and risk management technologies. Participatory technology demonstrations in farmers' fields covered natural resource management and production systems (crop and livestock) along with institutional interventions. KVK mobilized fanners for renovation of five irrigation tanks in the village under the project to improve surface water storage, enhance ground water recharge and there by ensure availability of water for raising crops in larger area. Farmers adopted diversification of Chrysanthemum cultivation as an alternate option to tomato to overcome glut in lire market and realized higher returns. Demonstration of Hybrid Napier CO-4 to

overcome green fodder scarcity gave 20.4% increase in yield compared to APBN-1. Foggers were placed in the animal sheds during summer to reduce heat stress in milch animals which increased milk yield by 3.01 per day per animal. Custom Hiring Center was established to supply tools and implements to farmers on nominal rental basis to overcome labour shortage and facilitate timely agricultural operations. An integrated approach is paving the way for development as a model climate resilient village for replication in other villages in the district.

18.40 Sethy S., D.R. Sarangi, M. Chourasia, S.M. Prasad, R.K. Mohanta and T.R. Sahoo, 2019 Dissemination of Mushroom Production Technologies and Viability of Mushroom Enterprises: A Study of Cuttack, Odisha. ***Int. J. Ext. Educ.*** **XV: 97-101.**

Toharness mushroom production and popularise the mushroom enterprise, Krishi Vigyan Kendra of ICAR-National Rice Research Institute located at Cuttack, Odisha is making all-round effort for dissemination of technologies through capacity building, front line demonstrations, field days and advisory services to tire farmers, farm women and rural youths regarding scientific mushroom production technologies, crop management, disease and insect management, post-harvest processing and value addition of produce. A total number of thirty five training programmes were conducted total consisting 1150 progressive farmers, members of SHGs and rural youths covering all 14 blocks of tire district from the year 2011 to 2016. A total numbers of 485 front line demonstrations were conducted for horizontal spread of the technologies. Inspired by the easy method of cultivation, good yield and economy of production and being exposed to extension interventions made by KVK, more than 74% participants started both paddy straw (Volvariella spp.) as well as oyster mushroom (Pleurotus spp.) cultivations in different seasons. Through much effort had been given for technology dissemination, viability of the mushroom enterprises was not shown satisfactory results. During the study, it was found that about 27%, 39% and 22% of the farmers discontinued mushroom cultivation in the 1st year,2nd year and 3rd year of the cultivation respectively. Only 12% of farmers were continuing for commercial production of mushroom in the 4th year. As most of the mushroom growers belong to small, marginal and landless categories, lack of Credit facilities in the form of loan or subsidy, nonavailability of quality spawn in the district, unorganised market sector, fluctuating price prevailing in tire market, changing weather conditions, lack of value chain system were some of the major challenges faced by the grower which need to bead dressed.

18.41 Zamir Ahmed S.K., R. Jayakumara Varadan, Siba Mahato, Amit Srivastava and A. Kundu, 2019. Out reach Centre : An Innovative Institutional Approach for Agricultural Technology Application in Andaman and Nicobar Islands. ***Int. J. Ext. Educ.*** **XV: 55-71.**

In a complex agro-ecosystem like Andaman & Nicobar Islands, difference in natural resource base and socio-economic setup of fanners inhabited across for flung areas necessitates thorough field evaluation and refinement of technologies before adoption. In the absence of a KVK, an Out Reach Centre (ORC)was established at Diglipur in North&Middle Andaman District in 2009 which is 290km away from Port Blair.An Automatic Weather Station was established in2011. Pekin duck, an improved breed introduced in2011 has spread from a single farmer to around 100farmers by 2017. A "Bio-mass Fired Copra Dryer" was installed in 2010 to produce quality copra. To reduce tire dependence of pulse farmers on Mainland for processing, a community Dal Mill was established in 2011.Toaddress the issue of poor yield in rice due toad mixed varieties, farmers were encouraged to produce Truthfully Labeled Seeds under Seed Village Concept since 2011. Satellite nurseries of fresh water Indian Major Carps were established since 2012 to cater quality finger lings. Many varieties of rice, vegetables and pulses developed by

CIARI were validated infarmers' field and released since 2013. Farmers' clubs were formed in 2014-15 to federate them into a producer group. Market survey on fish, chevon and pork was conducted toget an insight to the problems and prospects of their marketing. Progressive farmers were identified and recognized. Thus, tire concerted efforts of ORC to reach out to the unreached have made perceptible improvement infarm management and income leading to socio-economic empowerment of farmers in the far-flung areas of the Islands by adoption of doable technologies.

18.42 Rajeshwari M. Desai, 2019 Spiral Grain Separator : A Post Harvest Technology in Soyabean Production. ***Int. J. Ext. Edu.*** **XV : 50-54.**

Soya bean is India's one of the fastest growing crops and a significant foreign exchange earner. With a humble start of meager 0.44 million tones production in 1980-81; Soyabean has become a major export earner today. However, the Soya industry of the country is crippled by law yield, limited domestic demand, inadequate irrigation and infrastructure. One of the major problems encountered in soybean production is cleaning/sorting/grading of soyabean which is laborious and time consuming. Grading/sorting encourages good quality seeds/grains which eases marketing and fetches more money. Hence, the present investigation was carried out with an objective to carry out field validation of improved agricultural labour saving and cost effective tool viz. spiral grain separator. Three methods of grain cleaning methods were compared with the parameters viz. time, and labourers and electricity. The results showed that spiral grain separator is the best as compared to other two methods as on an average 3.5 q of grains are cleaned per hour manually with two labourers and without electricity. It is a cost effective, labour, time and drudgery reducing farm tool and leaves the farmer free to get on with other work. Hence, there is a very great scope for spiral grain separator in soyabean production which will result in improved economics of farm families.

18.43 Prabhu H., Nayaka, K.A. Shah, C.K. Timbadia and Alpeshkumar N. Lad, 2019. Promotion of Liquid Bio-fertilizers through Cluster Front Line Demonstrations. ***Int. J. Ext. Educ.*** **XV : 44-49.**

Kirshivigyna Kendra, Navsari Agricultural University, Navsari is conducting front line demonstrations and cluster front line demonstrations in various crops in adopted villages. Cluster front line demonstration found to be the effective tool to reach out large number of farmers in a short period of time. Thus extension worker can effectively implement a new technology and results are significant. Hence to popularize and promote the liquid bio fertilizer products of NAU viz., Rhizobium, Potash mobilizing bacteria (KMB), Phosphorus solubilizing bacteria (PSB), Azatobator and Acetobactor. Since five years KVK scientists are doing prompt attempt to promote liquid bio-fertilizers and conducted CFLDs in cereals, pulses, sugarcane and horticulture crops. These bio-fertilizers make nutrients that are naturally abundant in soil or atmosphere usable for plants. Field studies have demonstrated them to be effective and cheap inputs, free from the environmentally adverse implications that chemicals have. These inputs have multiple beneficial impacts on the soil and can be relatively cheap and convenient for use. At present farmers realized the significance of liquid bio-fertilizers in the district Navsari.

18.44 Ochola W.A., P.O. and D.O. Osewe, 2019 Influence of Agro-Ecological Zones on the Application of Extension Approaches in Kenya. ***Int. J. Ext. Educ.*** **XV : 28-38**

The effectiveness of agricultural extension approaches in improving farming practices among smallholder farmers depend on different aspects. This study assessed the influence of Agro Ecological

Zones (AEZ) on implementation of agricultural extension approaches implemented by agricultural institutions among smallholder farmers. A cross-sectional survey that combines both quantitative and qualitative data collection methodologies was used to gather relevant information on extension approaches used among the smallholder farmers in different Agro Ecological Zones (AEZ). The study sampledout12 agricultural institutions operating with in the six countries of the former Nyanza province:Kisii, Nyamira; Migori; Homa-bay; Kisumu and Siaya. A multi stage random sampling technique was used to identify a total sample size of 492 respondents comprising; 12 key informants, 120 agriculturalextensionpersonneland360 farming household leads. AEZ positively influenced the implementation; number of groups of persons participating in identifying the most dominant extension problem; those involved in coming up with the purpose; level of education of extension agents; reward to extension agents; the frequency of extension agents visit to farmers. Agro ecological zone negatively influence, number of groups of persons involved in programme planning and number of extension agents representing a given number of smallholder households.

18.45 Mayee C.D., B. Choudhary, A.J. Shaikh and Kamlesh Thalal, 2019. Technology Transfer that Mitigated the Challenge of Pink bollworm of Cotton in Maharashtra. ***Int. J. Ext. Educ.*** **XV : 24-27**

Pink bollworm of cotton is a serious pest first appeared in the form of an epizootic in 2017-18 season in all most all cotton growing areas of Maharashtra after 16 years of successful cultivation of Bt cotton. This has shattered the hopes of rainfed farmers as cotton is the only cash crop for them and they had adopted the Bt technology whole heartedly because of successful control of bollworms. When it was scientifically proved that the outbreak of the pest and probable breakdown of resistance of Bt cotton was in fact due to some common advocated agronomic practices that the farmers missed while growing the GM cotton. For example, farmers did not use the refugia around the Bt cotton which ultimately assisted the PWB built up and outbreak. A massive technology transfer campaign was organized for continuously two years, 2018-19 and 2019-20. The campaign technical tips were so designed that they were easily absorbed by the farmers for managing tile pest. The TOT used wide range of communication techniques like posters, hoardings, cartoon bulletins, radio jingles, farmers rallies and leaf lets to reach nearly 80,000 cotton growers in more than 32,000 villages. The success of campaign was assessed in the crop season and by farmers reaction. It revealed extreme satisfaction of farmers as they developed confidence in management of such pests and not only that the actual incidence in the compaign years was less than 5 per cent.

18.46 Kalyan Ghadei, 2010. Development of Tribals: Assessing the Role of Ramakrishna Ashram, Kalahandi district of India. ***Int. J. Ext. Educ.*****. VI : 55-64.**

Private extension by many community based organizations, non government organizations and private bodies devoted in extension services are acting as a complimentary to the public extension system. Ramakrishna Mission which is created by Swami Vivekananda has emerged as a big NGO world wide. Some organizations and Ashrams influenced by the ideology of Ramakrishna Mission are also carrying out extension services. This paper is based on the appraisal study of Ramakrishna Ashram, Kalahandi. The aim of the paper is to measure the impact of NGO intervention in social upliftment particularly on tribal empowerment in Kalahandi, a backward district of India. In this paper the author has tried to examine the philosophy and methodology of extension services of Ramakrishna Ashram and study how they have been implemented. The author is in opinion that the documentation of the activities and efforts of Ramakrishna Ashram would be useful for the

knowledge of others and could be replicated in similar situations by VOs, NGOs and Government agencies.

19. Technology Adoption

19.1 Kokate K. D., S.B. Desale, J.K. Dhemre and M.C. Ahire, 2009. A Study on Adoption of Improved Production Technology Among Mango Growers in Tribal Belts of Maharashtra. *Int. J. Ext. Educ.* V : 112-115.

The study was conducted in Nandurbar district during the year 2008 which is known to be the tribal belts of Maharashtra to know the extent of adoption of improved production techniques by mango growers. A total of 100 mango growers were interviewed using a pre tested interview schedule. The results revealed that 54 per cent of big farmers belonged to high adoption category as compared to 38per cent of small farmers. Further, 18per cent of small farmers belonged to low adoption category when compared to 14per cent of big farmers. Lack of knowledge about practices such as nutrient management, fertilizer application, spraying, timely irrigation, irrigation method and identifying pests and diseases were major production constraints faced by majority of both small (72-82%) and big (60-72%) farmers.

19.2 G. Tamilselvi and V. Sumitha, 2010. Extent of Adoption of Betelvine Technologies by the Growers. *Int. J. Ext. Educ.* VI : 65-69.

The Present study was taken up in Namakkal District of Tamil Nadu with 120 Betelvine growers. The main objective of the study was to study the extent of adoption of Betelvine technologies by the growers. The results revealed that majority of the respondents had medium level of adoption. The technologies viz., recommended support plant and spacing, banana as an intercrop, selection of setts, planting and after cultivation were found to be adopted by majority of the respondents. Whereas, only low level of adoption was observed for the practices viz. sett treatment, pest management, and disease management.

19.3 Puja B. Choudhary and V. S. Tekale, 2011. Input Utilization Behaviour of Cotton Growers. Int. J. of Exten. Educ. VII : 36-40.

The study on "Input utilization behaviour of Cotton growers" was conducted in year 2009-2010 in Wardha and Yavatmal districts. The objective of the present investigation was to study the relationship between personal, psychological, communication and input utilization behaviour of cotton growers. The information of 100 cotton growers from ten villages was collected with the help of pretested schedule by contacting them personally. The relationship between the independent variables and dependent variable tested with the help of co-efficient of correlation. Age, area under cotton, annual income, cotton production, extension contact have shown significant relationship with the input utilization behaviour of cotton growers. Thus it is concluded that these variables has influenced the input utilization behaviour of cotton growers. It is therefore suggested that multichannel approaches required to be adopted by the extension personnel as well as farmer.

19.4 Kota S. K., V. J. Tarde and M. S. Babar, 2012. Knowledge and Adoption of Export Oriented Practices Followed by the Mango Growers. *Int. J. Ext. Edu.* VIII : 51-55.

The study analyses the selected characteristics of mango growers, knowledge and adoption levels of mango growers on export oriented mango cultivation practices. Large majority of the mango growers had knowledge on the practices like maturity indices used for judging of mango fruits, harvesting, desapping, recommended variety for export, transportation, pesticide residues, nutrient management, flowering and fruitfulness; plant material and planting; protocols for bearing orchard, sorting and grading. recommended spacing, and soil preparation. Less than three fourth of mango growers had knowledge on integrated disease management, integrated pest

management, irrigation management. More than 90.00 per cent of the mango growers completely adopted the practices like recommended variety for export and protocols for bearing orchard. Whereas 80-90 per cent of mango growers completely adopted practices like harvesting, nutrient management, recommended spacing. Nearly half of the farmers adopted practices like desapping, integrated disease management, integrated pest management, transportation and irrigation management. Larger majority of the farmers had not adopted the practices namely, hot water treatment for mango, conditions for storage of produce and cleaning.

19.5 Aishwary Dudi and M. L. Meena, 2012. Adoption of Improved Mustard Production Technology in Pali District of Rajasthan. ***Int. J. Ext. Educ.*** **VIII : 5-8.**

A study was conducted in a district of Rajasthan which has a Krishi Vigyan Kendra run by Central arid Zone Research Institute (CAZRI). The KVK is repository of scientific knowledge for agriculture and its allied disciplines and it can be transmitted through effective extension means to the farmers who, in turn, can use this knowledge to improve the production and productivity in their farm operations. In this study, extent of adoption of eight selected improved cultivation practices of mustard production technologies were measured. To measure the extent of adoption and to compare the impact of training on extent of adoption, 120 numbers of respondents were selected from trained farmers and the same numbers of respondents were selected from surrounding area that had not been trained. Study was conducted in three different ways-firstly; all respondents were interviewed and categorized in to three groups of high, medium and low category of farmers for adoption of improved mustard production technologies. Secondly, overall adoption for both categories of respondents was measured and lastly difference between the adoptions of both categories of respondents was reckoned in terms of adoption of different practices of mustard production. High level of adoption was seen in adopting appropriate seed-rate (61.67% in trained groups) and (54.17% in untrained groups), whereas majority of the farmers were falling under medium adopters.

19.6 Mohankumar S., K. Satyanarayan, V. Jagadeshwary and Manjunatha, I., 2015. Milking Practices Adopted in Individual and Community Milking System in Kolar, Karnataka. ***Int. J. Ext. Educ.*** **XI : 70-76.**

The present study is aimed at assessing the milking practices adopted under Individual Milking System (IMS) and Community Milking System (CMS) at environment level and equipment level. Three Individual Milking Cooperative Societies (IMCS) and three Community Milking Cooperative Societies (CMCS) each from Bangarpet and Kolar talukas of Kolar district were randomly selected. Ten farmers from each IMCS and a supervisor from each CMCS were randomly collected. The objective of the study was to assess milking practices adopted under individual and community milking system at environment level and equipment level. Results from the study found that, cent-per-cent of the respondents cleaned the milking utensils before milking whereas only 86.66 per cent of the respondents cleaned the milking cans soon after dispatching the milk and 78.34 per cent of farmers animal sheds were of stone floor in IMS at equipment and environment levels respectively. In case of CMS, cent of the respondents maintained stone as a floor material in the animal shed and used the stainless steel cans for milking at environment and equipment levels respectively. Dairy farmers should be encouraged to adopt some more scientific milking practices which are important to produce clean milk like practicing dry hand milking, wiping the udder of animal and wiping the hand of milker after washing with water among the farmers of IMS. Similarly, in case of CMS dairy farmers should be encouraged to adopt practices like cleaning the teat cups after every milking and drying the udder after washing.

19.7 Sasane G. K. and S. S. Jadhav, 2019 Perspectives of Vegetable Growers Towards Eco-friendly Management Practices. ***Int. J. Ext. Edu.*** **XV : 154-161**

Green revolution technologies have more than doubled the yield potential. For the present study, an ex-post-facto research design was followed and research was carried out in Pune and Kolhapur districts Western Maharashtra. The sample size was followed and research was carried out in Pune and Kolhapur districts of Western Maharashtra. The sample size was 180 vegetable growers. Variables which had direct relevance to the eco-friendly agriculture practices followed in vegetables are chosen for the present research. Majority of the respondents had moderate knowledge regarding environmental hazards and eco-friendly management practices. Less than one third of the sample respondents had low adoption level about eco-friendly management practices. Majority of the respondents had faourable attitude towards eco-friendly management vegetables cultivation of the designated independent variables have positive and significant relationship with dependent variables and nearly fifth percent variation is found in assortment of variables for the existing research.

20. Tribal Development

20.1 Chaturvedi A. K., Niranjan Lal and Khalid, 2015. Livelihood Security for Tribal Household through Backyard Poultry Rearing in Chhattisgarh. ***Int. J. Ext. Educ.*** **XI : 46-48.**

The present study was carried out in the Bastar District of Chhattisragh. The 120 poultry farmers were randomly selected from two blocks (Bakawand, Jagdalpur) of Bastar districts of Chhattisgarh. The data were collected from selected poultry rearers through a structured interview schedule after pre-testing. The findings of the study revealed (55.83%) that poultry rearers belonged to Gond tribe with primary to secondary level education and small size family, agriculture as primary (51.67%) and poultry as secondary occupation (35.38%), with medium flock size (11-16)desi birds and reared with a locally available material available in house. Majority of the respondents were marginal to small land holding, getting average gross annual family income of Rs. 42954.2±2197.88 in which poultry contributes about Rs. 3957.5±117.23. They reported that (68.33%) got 35-39 eggs per year average of 36.48±0.18 eggs at a price of Rs. 7.01±0.07 in local market and feriwala. Whereas, average body weight gain was 1.41±0.02 kg per bird per year and average selling price of Rs. 310.21±2.06 per kg live birds.

21. Farm Women and Empowerment

21.1 Antwal P. N. and C.M. Bellurkar, 2007. Participation of Rural Women in Farm and Livestock Management Activities. ***Int. J. Ext. Educ.*** **III : 61-67.**

The investigation was carried out in three agro-climatic zones of Maharashtra, which fall under the jurisdiction of Marathwada Agril. University, Parbhani. The total sample of 2000 rural women belonging to five distinct landholding categories were randomly selected and interviewed personally with structured interview schedule. Profile of the rural women, their participation in farming and livestock management activities and correlation of participation with personal, social and economic factors of the rural women were studied. It was found that a majority of rural women were lower middle aged, married, having farming as their occupation and having low socio- economic status. Further, it was noticed that participation of the rural women with female members was maximum in farming activities followed by joint participation with male members and vice-versa in case of participation in livestock management activities. It was found that participation in majority of the farming activities were found to be negatively and significantly correlated with occupation, land holding, economic factors. Age was found to be positively and significantly correlated with participation in farming and livestock management activities.

21.2 Sabita Mishra and C. Satapathy, 2008. Capacity building for Income Generation of Farmwomen in Rice based Farming System. ***Int. J. Ext. Educ.*** **IV : 27-31.**

There is tremendous scope for improving income generation through imparting training and access to new technologies to rural women. Providing inputs at door step and provision of micro-credit will help in adoption and continuance of technology. Self help groups will help in achieving goal of rural food and nutritional security and improving their livelihood.

21.3 Tamilselvi G. and J. Vasanthakumar, 2008. Entrepreneurship Development among Rural Women. ***Int. J. Ext. Educ.*** **IV: 79-84.**

Agriculture based small scale micro enterprises provide wide spectrum employment opportunities for farm women. In order to know, howfor these women possesses entrepreneurial characteristics,a studywas undertaken in Theni District of Tamilnadu with 100 rural women entrepreneurs. An index was developed to measure their entrepreneurial behaviour. Thefindings of the study revealed that the rural Womenhad medium to high level of entrepreneurial behaviour. Most of the women possessed high level of entrepreneurial characteristics viz., self-confidence, achievement motivation, innovativeness and risk orientation. The characteristics namely, education, social participation, information source utilization, time management, training programs attended and perceived profitability were found to have positive and significant relationship with entrepreneurial behaviour. It is recommended to establish a single window service for women entrepreneurs managing agriculture based enterprises.

21.4 Punam K. Yadav and Indu Grover, 2009. Gender Analysis of Dairy Related Parameters and Empowerment through Dairy Coopertives. ***Int. J. Ext. Educ.*** **V : 98-103.**

The objective of the present investigation was to investigate the gender profile, dairy dimensions and ascertain gender empowerment of members of dairy cooperatives. The study was conducted in Haryana State, India on a sample of 200 members of dairy cooperative, comprising of 100 men and 100 women drawn, from 10 villages of two districts. The daily production and sale of milk was high for men i.e. 18.4 and 13.1 litres while this was comparatively lessby women members i.e. 15 and 10 litres, respectively. Both genders feel that dairying is moderately profitable and were highly satisfied. Majority of both men and women (50% and 48%) rated empowerment to be of medium nature. The differences in ranks for empowerment on the basis of gender were non-significant.

21.5 Rashmi Singh and B. P. Sinha, 2011. Entrepreneurial Performance of Women Psychological Mainspirings, Sociological Facilitators and Inhibitive Factors. ***Int. J. Ext. Educ.*** **VII : 8-20.**

Entrepreneurship development among women has been taken as a consequence of one process where psychological mainsprings of a woman, her ambitions, aspirations and her belief in self along with facilitative factors in the society or her social environment have played a synergistic role in her success. Specific objectives of the study were 1.To study the profile, entrepreneurial traits and performance of women entrepreneurs 2. To identify sociological and psychological factors promoting entrepreneurship among women. 3. To study the nature and extent of societal support to women entrepreneurs. 4. To identify inhibitors of women entrepreneurship process and problems faced by women entrepreneurs. It is concluded that behavioural trainers may be involved to spread awareness and develop these abilities among women entrepreneurs. Facilitation factors in the environmental sphere of women entrepreneur proved to be promoters of the entrepreneurship development process among women. Lack of resource, lack of awareness, dual responsibility, poor family support, mobility constraint, marketing woes, non-payment by clients and non-availability

of a guarantor were found to exerting inhibitive influence on the process. It is desirable that women are enabled to maximize on facilitators whereas efforts may be made to minimize the inhibitors.

21.6 Bagdi G. L., 2012. Women's Participation in Watershed Development Programme : A Case Study of Antisar Watershed of Gujarat. *Int. J. Ext. Educ.* VIII : 19-23

Women's participation in watershed development programme is a collective and cooperative effort by the local women farmers for contributing and sharing common benefits. Women's participation in soil and water conservation interventions for watershed development programmeis imperative during planning, implementation and maintenance phases to make the programme more successful. The study was conducted during 1998-2001 in the Integrated Wasteland Development Project (IWDP), Antisar watershed, located in Kapadwanj Taluka of Kheda district in semi-arid tropics of Gujarat state to measure the extent of women s participation in watershed development programme. The extent of participation towards each activity regarding planning, implementation and maintenance for Antisar watershed development programme was computed with help of developed Activity Intensity Index (AII). Peoples Participation Index (PPI) was also developed by the investigator to measure the overall extent of women's participationin soil and water conservation for watershed development programme during planning, implementation and maintenance phases. The results in the paper revealed that the women farmers exhibited high participation in the watershed development activities such asi)planning of check dams in theirfields, ii) allowed Project Implementing Agency (PIA) to implement the soil and water conservation works for development of the Anisar watershed, iii) and women's were contributed money in maintenance of SWC structures. The overall extent of women participation during the Antisar watershed development programme planning, implementation and maintenancephases were also computed high with the help of the PPI.

21.7 Tekale V. S., 2012. Participation of Rural Women in Decision Making Process in Agriculture. *Int. J. Ext. Educ.* VIII : 56-62.

This study was carried out in Nagpur district. An exploratory design of social research was used. The two panchayat Samities namely, Hingana and Saner were purposively selected from Nagpur district. From selected each panchayat samities 50 each rural women were selected for the present study. This from two panchayat samiti 100 women respondents were selected by simple random sampling method from ten villages. The majority of the respondents were using more localite sources of information like neighbours, relatives/friends and progressive farmers. In case of extent of participation in decision making process in agriculture it was observed that respondents were only consulted in the area of participation of land (52.00%), method of sowing (47.00%), proper time sowing (44.00%), selection of crop (36.00%) and crop varieties to be sown (36.00%) respectively. The respondents opinion were considered while decision making n the area, harvesting of crop (42.00%), followed by storage of farm produce (34.00%) and use of labours (30.00%) respectively. The respondents were activity involved in final decision in area of use of labour (42.00%), storage farm produce (40.00%), harvesting of crops (31.00%) and intercultural operations (30.00%) respectively. Nearly equal proportion of respondents 39 and 35 per cent had high and medium level of overall participation in decision making process in agriculture. Majority of respondents reported that reasons for non participation in decision making were male dominance (56.00%), lack of technical knowledge (52.00%), education (39.00%), agricultural development policies (32.00%) and control over resources (34.00%), respectively.

21.8 Harsha R. Sapdhare, 2013. Role of Tribal Women in Farm Activities. *Int. J. Ext. Educ.* IX : 69-71.

In most societies, women have varied roles to play while still clinging to their cultural beliefs. Agriculture, for intance, is one activity where women have been seen to participate actively. In India women participate in agriculture for varied reasons. In Indian tribal communities there are distinct social-cultural groups with special traditions, customs, and marriage systems. More often than not the requirements of tribal people tend to be limited and there are few of them. A larger population of the tribal people often engages in agriculture. This research paper discloses the role played by women in the tribal communities in India. The main activity related to the Indian tribal people is agriculture, and, as such, there are certain roles assigned to both genders. From the findings, an increase in the sources of information means there is a higher performance of the role for tribal women in farm activities. In that regard, an extension worker often carries out activitiesfor the tribal women through conducting home andfarm visits as well as holding meetings for group discussions. The research concludes that tribal women need to be more educated so that their role performance is increased for the betterment of agriculture.

21.9 Chapke R. R., 2013. Women's Perception on Decision Making in Integrated Farming System. ***Int. J. Ext. Educ.*** **IX : 65-68.**

Results of the study revealed that the farm women perceived their involvement in the decision making process of Integrated Farming System. Contributions of the farm women in Integrated Farming System was found substantial. Whereas, they had to try hard to consider their ideas and alternatives in the decision and its implementation by negotiating with the family decision maker (100%) followed by the help of their family members especially through theirchildren (88.45%). With the rapid advances in new agricultural technologies, use by the farm women had largely been ignored. There is a need of empowering them with latest knowledge, skill and increase their involvement in decision making process.

21.10 Beena J. Patel, H.D. Shastri and K. M. Joshi, 2014. Skill Development of Rural Women about Value Addition in Jute. ***Int. J. Ext. Educ.*** **X : 185-186.**

Jute is very suitable in agricultural commodity for bulk packaging. It is one of the most versatile natural fibers that have been used in raw materials for packaging, textiles, non-textile, construction and agricultural sectors. Selected respondents who were able to identify the jute material and interested for receiving training on value added utility article for study. Nearly one-fourth respondents were interested in use of jute waste material for making sitting cushion and doormats. Majority 88.46 per cent of the respondents were interested and fully satisfied in making jute bag with broom strips. Majority of the respondents perceived all the three articles very useful. Almost 96.00 per cent respondents were willing to start income generating venture by preparing jute bags with broom strips and almost 93.00 per cent were willing to start an enterprise by preparing file cover with broom and bamboo strips.

21.11 Lad A. S. and P. R. Deshmukh, 2014. Correlates of Utility Perception of Mass Media by The Farm Women. ***Int. J. Ext. Educ.*** **X : 159-164.**

The present investigation was conducted in Parbhani, Hingoli and Nanded districts in Marathwada region of Maharashtra State. The main objective of the study was to assess the relationship between socio-personal, economic, psychological and communication characteristics of thefarm women with their utility perception. A structured interview schedule was used to collect data from 150 respondents who were viewing agricultural programmes on TV, as well as listening agricultural programmes on radio and also reading agricultural articles in the newspaper. The statistical methods and tests such as frequency, percentage, mean, standard deviation, co-efficient of correlation and multiple regression were used for the analysis of data. The result of the study showed that farming

experience, education, social participation, leisure time, annual income, innovation proneness, scientific orientation, market orientation, awareness and mass media use behaviour were found to be positively and significantly related with overall utility perception of mass media. Multiple regression analysis indicated that from all selected fourteen variables, three variables namely scientific orientation, market orientation and mass media use behaviour were significantly contributing factors in case of utility perception of mass media.

21.12 M.V. KarunaJeba Mary, V. Ravichandran and T.N. Sujeetha, 2014. Assessing The Extent of Participation of Rural Women in Self Help Group Activities. ***Int. J. Ext. Educ.*** **X : 153-155.**

The study was conducted in three blocks of Theni district with sample size of 220 women to measure the extent of participation of rural women in self-help group activities. For the purpose of this study, extent of participation has been operationalized as the degree to which rural women participate in various activities of SHGs. The respondents were interviewed personally by a well-structured interview schedule. The findings on the extent of participation are given under the overall participation and activity wise participation. The salient findings of the study are, majority (74.09%) of the respondents had medium level of overall participation, followed by high (17.27%) and low (8.63 %) levels of overall participation. Attending group meetings (2.90), operating commercial ventures (2.70) and attending village developmental works (2.50) are the major SHG activities, economic activities and social developmental activities, respectively.

21.13 Shobhana Gupta, 2014. Constraints in Effective Transfer of Technology to the Farm Women through KVKs. ***Int. J. Ext. Educ.*** **X : 131-135.**

The major constraint for low agricultural production in India is considered to be lack of transfer of technology from the research laboratories to its ultimate users, which is the farm household. Further more, it is not possible for the farmers to increase their size of land holding. Rather, it is going on decreasing day by day, due to increasing population and continuous fragmentation of land. Hence, the only solution to the above problem is to conduct more practical researches and to provide intensive and frequent exposure to the farming community for adopting new technology which can help them to obtain higher production per unit area. The researcher in this study has tried to find out the constraints in effective transfer of technology to the farm women through KVKs. It was found that the scientists perceived"Lack of motivation among the farm women" while the farm women perceived"Lack of resources and inputs" as major constraints in the effective implementation of KVK.

21.14 Badodiya S.K., C.I. Gur, Kamlesh Chourasia and Savita Singh, 2014. Analytical Study on Occupational Health Hazards among Tribal Farm Women in Operations of Different Agricultural Activities. ***Int. J. Ext. Edu.*** **X : 115-119.**

The entry of women into the workforce as paid labour has been a gradual process extending over several centuries with a substantive increase following industrialization and World War-II. Tribal women constitute half of the work force among tribals in India. Tribal women face problems and challenges in getting a sustainable livelihood and a decent life due to environment degradation and the interference of outsiders. No field operation is beyond the reach of women. The study was conducted purposively in Betul district of Madhya Pradesh. The sample size for the study was 120 tribal farm women. Most of the tribal farm women (44.17%) were frequently occurring in health hazards in operation of agricultural activities. Out of fourteen independent variables eleven variables were found having negative and significant relationship with health hazards and only age was found to have positive and significant relationship with health hazards while family background and size of family were not having significant

relationship with health hazards. Majority (72.00%) tribal farm women suggested that medical facilities should be available at village level.

21.15 Lad A.S. and P.R. Deshmukh, 2014. Utility Perception of Mass Media by Farm Women. ***Int. J. Ext. Educ.*** **X : 76-79.**

The present investigation was conducted in Parbhani, Hingoli and Nanded districts in Marathwada region of Maharashtra State. The main objective of the study was to know utility perception of mass media by the farm women. A structured interview schedule was used to collect data from 150 respondents who were viewing agricultural programmes on TV as well as listening agricultural programmes on radio and also reading agricultural articles in the newspaper. The statistical methods and tests such as frequency, percentage, mean, standard deviation, co-efficient of correlation and multiple regression were used for the analysis of data. The result of the study showed that most of the respondents were having medium level of farming experience (58.00%), education upto secondary school level (58.67 per cent), medium social participation (65.33%) and belonged to joint family (65.33%), 2 hours per day as leisure time (52.00%), semi-medium land holding (32.67%),farming as their occupation (52.67%), medium level of annual income (82.00%), medium innovation proneness (69.33%), medium level of scientific orientation (67.33%), medium market orientation (66.00%), medium level of awareness (46.67%) and medium mass media use behaviour (58.67%). It was also found that majority of respondents were having medium utility perception ofTV (73.33%), medium utility perception of radio (68.66%), medium utility perception of newspaper (65.33%) and medium utility perception of mass media (50.67%).

21.16 Tekale V. S., J. D. Jadhav and J. I. Shaikh, 2014. Empowerment of Rural Women through Self Help Group. ***Int. J. Ext. Educ.*** **X : 66-64.**

The study Empowerment of rural women through self help group was conducted in Mauda tehsil of Nagpur district. The sample consisted of 100 rural women members of SHGs from 10 SHG's of 10 villages who were selected randomly. Majority (90.00%) respondents were increased their self reliance and self confidence up to (88.00%) after joining SHGs. More than half (57.00%) respondents were empowered to interact with male outside the family. About same percent i.e. 74.00 per cent in relation with empowerment in access to modern technology and increase in self education by the respondents. The respondents get opportunity to economic development was (86.00%) after joining SHG's. The respondents had increase in awareness was 71.00 per cent in awareness about political institution. Due to participation in SHG's change in women empowerment were in descending order as women empowerment psychologically(79.82%) followedby economically (66.21%), socially (52.77%), politically (45.98%) and last culturally (28.17%), respectively.

21.17 Kankabati Kalal and Loukham Devarani, 2015. Gender Differences in Agricultural Empowerment : A Study of Farm Households in Tripura. ***Int. J. Ext. Educ.*** **XI : 77-85.**

In all walks of life there are gender differences in needs, problems, capacities, opportunities and impacts. Proper gender main streaming strategy requires understanding of these differences. The study was conducted in 60 randomly selected households (comprising a primary man and woman member engaged in agriculture) of Charilam block, Sepahijala district, Tripura to investigate the gender differences in the agricultural empowerment. The tool used for measuring empowerment was the Women Empowerment in Agriculture Index (WEAI) developed collaboratively by the USAID, IFPRI and OPHI. It was observed that the mean empowerment score of men was higher than that of women though no significant difference was observed between the two. The mean empowerment score of tribal women was significantly higher than that of non-tribal women. Family size, cosmo

politeness and information seeking behavior of was found to be positively and significantly related with the level of empowerment for women. While for men, only family size showed significant relationship with empowerment. Education of respondents was observed to have significant relation with gender parity within a household. Majority of women reported household drudgery, stringent traditional taboos & restriction, balancing farm & home and lack of gender friendly equipments as major problems. As for men, important problem was demanding family members.

21.18 Tekale V.S., S.S. Gobade and V.V. Tayde, 2015. Participation of Farm Women in Agricultural Activities. ***Int. J. Ext. Educ.*** **XI : 49-53.**

The research study was conducted in Sakoli taluka of Bhandara district of Viarbha region of Maharashtra state. An exploratory research design was used for the research study. The 100 respondents were selected from 10 villages of Sakoli taluka by simple random sampling. The three fourth of the respondents (75.00%) had medium level of participation in agricultural activities. In case of pre-sowing operations the cent per cent of the respondents of farm women were actively participated in stubble picking and cleaning of seeds activities. The great majority of the respondents of farm women were actively participated in sowing (94.00%) and nursery raising(86.00%), respectively. In post sowing operations cent percent of the respondents were actively participated in uprooting and transplanting of seedlings. The great majority of the respondents actively participated in gap filling (92.00%) and weeding (90.00%). Majority of the respondents moderately participated in application of fertilizers(62.00%) and helps in spraying of insecticides and pesticides(62.00%) and irrigation operations, respectively. In case of harvesting operations cent per cent respondents actively performed activities harvesting of crops, and 93.00 per cent of the respondents helps in collection of harvested crops. In post harvest operations majority of the respondents actively participated in drying (97.00%), cleaning and grading of farm produce (92.00%), the respondents who actively participated in threshing (57.00%) and storage of farm produce (54.00%), respectively. In other agricultural activities, the equal per cent of respondents (77.00%) actively participated in caring of animals and cleaning of cattle shed, respectively.

21.19 Purnima K.S. and B. Sunita, 2016. Effectiveness of Non-Governmental Organizations in Women Development – A Critical Analysis in Andhra Pradesh. ***Int. J. Ext. Educ.*** **XII : 84-86.**

The study was conducted in the three regions of Andhra Pradesh i.e., coastal Andhra. Telangana and Rayalaseema, with a sample size of 150 women beneficiaries of 15 selected NGOs. Exploratory research design was adopted. For the purpose of this study, the effectiveness of NGOs on women beneficiaries was assessed by developing an index with 12 selected indicators. The findings are presented region wise. The salient findings of the study are that for all the NGOs, majority of the women had fallen under medium category (40%) followed by low (35%) and high (25%) in the three regions with respect to effectiveness of NGOs on women development. The findings also revealed that for most of the indicators, the women beneficiaries of NGOs in coastal Andhra scored better.

21.20 Swathi Lekshmi P. S. and Narayanakumar R., 2016. Determinants of Fisherwomen's Economic Status in Fisheries. ***Int. J. Ext. Educ.*** **XII : 78-83.**

India's vastcoastline provides food, stability, and income:-producing opportunities for many of India's economically disadvantaged sections of the population. Fisheries in India account for 2.5 per cent of the gross domestic product and generate powerful income and employment opportunities for many of the country's rural poor. Women, who constitute approximately half of India's population,

play a vital role in the operations of the fisheries and their continuing growth as a component of the agriculture sector of the economy. The contributions of the fisher women penetrate every aspect of post harvest handling, preservation, processing and marketing of seafood products, and provide an integral link between producers and consumers. The study was conducted on a sample of 50 fisher women drawn from the 2 coastal districts of Tamilnadu namely, Kancheepuram and Chennai. The findings revealed that, most of the fisher women had a high level of livelihood index (Score of <50), and also had a high level of aspiration (Score <13). The stepwise regression analysis revealed that the variables influencing the livelihood index of fisher women, in order of importance, were annual level of savings and annual level of debt. The annual level of expenditure and annual level of savings had a positive and significant influence on the level of aspiration of fisher women.

21.21 Pragatika Mishra, Gayatri Biswal and Sabita Mishra, 2016. Influence of Environmental Climate in Empowerment of Women Self-Help Group through Different Entrepreneurial Activities. ***Int. J. Ext. Educ.*** **XII : 63-67.**

The study examined the entrepreneurial activities which influence the environmental climate in empowerment of WSHGs. The particular research study was done in three districts of Odisha namely Cuttack, Puri and Khurda. About 240 women were selected randomly as respondents having experience as SHG member. Data was collected through survey method by using a pre-tested questionnaire and attempt was made to know the influence of environmental climate for empowerment of WSHGs through different entrepreneurial activities.

21.22 Chitra M. Bellurkar, 2017. Comparison of Time Utilization of Urban, Rural and Tribal Farmwomen in Farming and Post-Harvest Activities. ***Int. J. Ext. Educ.*** **XIII : 61-65.**

Farm women constitute so significant part of working women population in our country that it necessitates a fuller understanding of their status and role not only as they now are but as they may be in future. The study was carried out from two agro-climatic zones of Maharashtra. Nanded district as selected from Central Maharashtra Plateau zone and Nagpur district was selected from Central Vidarbha zone. This research consist sample of 409 farm women for farming activities and 410 farm women for post-harvest activities from urban, rural and tribal areas. In the present study, time spending pattern of the respondents was compared in farming and post-harvest activities for rabi and kharif seasons. Time spending of the respondents in both the seasons was recorded in days per year. Overall it can be concluded that tribal respondents under this study utilized more time i.e. 126.67 days per year for performing the farming activities followed by rural women who spent 123.05 days. Urban women spent comparatively less time i.e. 104.06 days for farming activities. For the post-harvest activities, urban women spent 77.93 days per year whereas tribal women spent 47.82 days followed by rural women who spent 46.37 days for both the seasons per year.

21.23 Chaturvedi D., P. Singh and Milind Rathod, 2017. Self Help Group : an Effective Approach to Capacity Building Women in Arid Rajasthan. ***Int. J. Ext. Educ.*** **XIII : 49-51.**

Capacity building of women can be the valid option for the empowerment of women. Mobilization and formalization of SHG of women remain a valid option to take the benefit through the group effort. Being in a group builds up the confidence level, capacitates them, and raises the awareness. The present study addresses the capacity building of rural arid women of Rajasthan through participation in Self Help Groups. The research has been carried out in the Pokaran block and Jaisalmer block of Jaisalmer District, Rajasthan, India. Field data were collected through survey cum interview and focus group discussion with 240 rural women

based on their working pattern. Around 73.88 percent of the respondent had the skill off reely & frankly speaking in SHG meetings without any hesitation followed by keeping accounts of SHG. Capacity building of women in terms of writing minutes of SHG meetings and speaking during public meetings were also encouraging.

21.24 Suman Singh, Hemu Rathore, Charu Sharma, Tanvi Khurana, Kritika Singh, 2018. Technology Resource Centre: Transforming Time into Money through Drudgery Reduction of Indian Women Farmers. ***Int. J. Ext. Educ.*** **XIV : 35-40**

Women do not have proper awareness and knowledge abut improved tools and equipment that can reduce their drudgery. The women don't have access to tools and machines to ease their hard manual labour. Since women's contribution in agriculture is significant to economy, improving their work efficiency is of concern and needs to be given high priority. These concerns of women farmers have been addressed through this study initiated by IEA for funding through John Deere Foundation. Under the project a Technology Resource Center was established for easy access/availability of technologies to reduce their drudgery. The capacity building training as well as field demonstrations of technologies is transforming lives of women farmers full of drudgery to ease and comfort improving efficiency and output in agriculture work.

21.25 Madhu Prasad V.L. and S. Chandrashekar, 2019. Perception of Family Headed Farm Women about Integrated Farming System in Southern Karnataka. ***Int. J. Ext. Educ.*** **XV : 39-43.**

The study was conducted in purposively selected three districts of Southern Karnataka. One taluka from each district, one Grama Panchayath from each taluka and five villages from each Grama Panchayath were selected based on the maximum number of beneficiaries covered under Livelihood Improvement of SC Farm Families through Integrated Farming System (IFS) project. Further, from each village, eight respondents were selected by using simple random technique thus making a total sample of 120. The data were collected by using structured interview schedule. The perception of family headed form women about IFS was recorded on three point continuum viz. 'Agree' 'Uncertain' and 'Disagree' with a score of 3, 2 and 1 respectively. Further, analysed the data by using appropriate statistical tests. The results revealed that majority of respondents (51.67%) belonged to high category of perception about IFS. With respect to the different statements such as IFS ensures food and nutritional security of farm family, IFS helps to increase income diversification and every piece of land is effectively utilized in IFS were recorded maximum mean scores (each 3.00) with the respondents. But, the statements namely IFS helps to protect environment through recycling of animal waste and IFS increases competition for resources among different enterprises were recorded least means scores (2.14 and 2.19) with the respondents. The characteristics such as educational status, occupational status, land holding, farming experience, extension participation, economic orientation and scientific orientation exhibited positive and significant relationship with perception of family headed form women about IFS. Hence, the concerned development departments should organize the extension educational activities with gender expertise to educate the family headed form women about all the benefits of IFS. The positive and significantly related characteristics of respondents need to be considered while selecting for the extension educational programmes to enhance their perception level and promote the IFS for doubling the family headed farm women income.

22. Watershed Management

22.1 Rajanna N., N. Nagaraja and T.N. Anand, 2009. A Scale to measure people's participation in watershed development project. ***Int. J. Ext. Educ.*** **V : 78-89.**

An attempt has been made to develop a scale to measure the people's participation in watershed development projects during the year2009. Normalized rank approach was used in development of the scale. Six components were identified to measure the people's participation based on the expert's judgment. The components were functioning of community based organizations, participatory planning, participatory execution, participatory monitoring and evaluation, maintenance of assets created and beneficiaries contributions. The validity of the scale was established by using content and construct validity (internal constancy technique was used, values ranged from 0.567 to 0.683). The test-retest reliability (0.729) and scorer reliability (0.791)were used to establish reliability of the scale. The norms of distribution of people's participation scores obtained by using the developed scale were also established. When the scale was used to measure the people's participation in watershed development, the frequency distribution and graphic presentation showed the distribution having approached normal curve. The values of measures of central tendency, variability, divergence normalcy and test of goodness offit, also indicated the normal distribution of the frequencies. The scale developed therefore, was objective and a useful tool for the agencies implementing watershed development projects.

22.2 Meena M. L. and N. K. Sharma, 2012. Watershed Technology in Arid Zone of Rajasthan : Constraints Analysis. ***Int. J. Ext. Educ.*** **VIII : 37-43.**

Agricultural production in the state of Rajasthan is mainly dependents upon monsoon rains. Therefore, watershed development is very important. Efforts of the state government are encouraging the farmers in adoption of watershed technology for agricultural production and soil conservation. The study conducted in four districts of Jodhpur watershed region of Rajasthan aimed to find out the constraints faced by the farmers and the solution for effective implementation and adoption of watershed technology. The results of the study showed that constraints related to organization of various groups at watershed level were the most important perceived by farmers, second was the constraint related to soil and water conservation, followed by constraint in crop production, agro-forestry and dry land horticulture, household production system and livestock management. Proper and fair selection of watershed secretary ana volunteers, publicity of constitution of all committees were the most important suggestions by farmers for adoption of technology for watershed development.

22.3 Kulshrestha A. and Y. K. Singh, 2017. Impact of National Watershed Mission Development Programme in Rahugaon of Morena District of Madhya Pradesh. ***Int. J. Ext. Educ.*** **XIII: 89-91.**

A study was conducted in Rahugaon micro watershed in Sabalgarh block of Morena district of Madhya Pradesh during 2010-11 to assess the impact of National Watershed Mission Development Programme in Rahugaon of Morena District. A benchmark survey was under taken on management practices. Positive effect of programme was noticed in increase in area of arhar, bajra and wheat while productivity of gram and arhar was increased with a change in agricultural area, irrigated area, cropping intensity, water resources and increased in area of horticultural crops. Increased pasture and vegetation area were increased; Soil and water conservation structure and water resources were increase. The cattle population was also increased due to sufficient water and fodder availability. The co-ordination of farmers and government functionaries, land development activities were some of the measures taken to improve the Rahugaon Micro Watershed. Better co-ordination between development agencies and voluntary organizations is also essential for effective implementation of watershed programme.

22.4 Bagdi G. L., P. K. Mishra, S. L. Arya, S. L. Patil, 2017. Factors for Continue Adoption of Soil and Water Conservation Technologies for Watersheds Management in India. ***Int. J. Ext. Educ.*** **XIII: 66-75.**

The Indian Institute of Soil and Water Conservation (IISWC) and its research Centres have developed successfully many model watersheds in India in the past and implemented large number of Soil and Water. Conservation (SWC) technologies for sustainable management of watersheds. Though many evaluation studies regarding hydrology and crop production have been conducted on these watershed projects in the past, assessment of continue adoption of SWC technologies has not been done. This research study was conducted during 2012-15 as core project at Vasad as lead centre along with IISWC headquarter Dehradun and Centres Agra, Bellary, Chandigarh, Datia, Kota & Ooty, with the specific objective to measure the extent of continue adoption behaviour of farmers towards adopted SWC technologies and also ascertain thefactors responsible for their continuance for watershed management. Data collection schedule wasdeveloped along with indices for measurement of continue adoption behaviour of farmers towards SWC technologies. Proportionate stratified random sampling plan was adoptedfor selection of at least 50 respondentfarmers from selected 38 watersheds in the country and data collection was done through personal interview method. The study revealed that about three-fourth (73%) SWC technologies continued adopted byfarmers of watersheds developed byIISWC and its centres in the country. It was also revealed thatfarmers continued adopted bunding (62.7%), land leveling (37.1%), terracing (29.3%), check dam (22.8%), gully plug (11.2%) andpond (6.2%) technologiesby beneficiaryfarmers in theirfields for sustainable management of watersheds. Reduction in runoff & soil loss, ground water recharge and more yield were the most important reasons for continued adoption of these SWC technologies for sustainable management of the watersheds developed byIISWC and its Centres in the country.

22.5 Shikha Singh and Neelam Bhardwaj, 2019 Gender Gap in Integrated Watershed Management Project. ***Int. J. Ext. Educ.*** **XV : 72-75**

In the recent decades, as a consequence of environment degrading and resource depletion in the hill areas due to soil erosion and denudation of hill is resulting in increase struggle to produce good amount of food grain. The migration of male member of the family for better livelihood options underlies the dependence of rural economy on women's shoulders. Deforestation and low water availability adds to their problems by spending more time in collection of fuel, fodder and fetching water. Women participated to a considerable extent in watershed activities, yet their participation in decision making was not up to the mark. The study was conducted on Uttarkashi and Bageshwar district of Uttarkhand. Six villages were selected using simple random sampling, Primary data had been collected by conducting interviews with 150 women and 150 men in selected villages located within the watershed. It was revealed from the study that management practices mostly done by women in the study area but its ownership and control were in men's hand. Men had a greater access and control over resources as compared to women. This might be due to deeply rooted inequalities in socio-political participation of women, male dominancy, social stigma; stereotype mindset because of this, the status of women was very poor in decision making. Considering this situation, the researcher felt the need to explore the ender differences in rural areas, particularly in hill areas of Uttarkhand. Therefore, the key objective of the study is areas the gender gaps in the implementation of different activities of IWMP.

23. Value Addition

23.1 Joshi Vister and Sachin Gondkar, 2017. Growth Drivers – Prospects for Food

Processing Industries in Haryana. ***Int. J. Ext. Educ.*** **XIII: 107-110.**

Food processing industries considered as sunrise sector in India. The added advantage of Haryana is its close vicinity to Delhi/NCR the state applying continuous efforts to explore the benefit of this sector. Numerous entrepreneurship development programmes running in state by the government. But to engage more youths, it is important to understand the factor responsible for the growth of this sector to encourage entry in a new venture. The present study was conducted on 160 entrepreneurs engaged insmall and medium food processing enterprises (SME) in Karnal, Sonipat, Gurgaon and Yamunanagar districts of Haryana state to understand the growth driver's of existing units in the state which encouraged demand of their products which act as igniting force for youth to enter into this business. A survey was done with the help of an interview schedule. Increasing urbanization-lifestyle and aspirations and increasing spending's on health foods/health consciousness were perceived as major growth driver and had the highest prospects while, organized retail and private label penetration had least prospect perceived by entrepreneurs.

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