Attitude and Awareness of Farmers Towards Natural Resource Management

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ABSTRACT

Farmers have a vital role in environment management and development. Hence the present study was conducted to study the attitude and awareness of farmers towards natural resource management practices. The present study was conducted in two in Yavatmal district. Two tahsils namely Pusad and Umarkhed consist considerably more forest area, hence selected for the study. Five villages from each tahsils were selected purposively considering more forest area. From each of selected village, 12 farmers were selected randomly and accordingly the data was collected from 120 farmers with the help of structured interview schedule. In the attitude and awareness of farmers towards the management of natural resources ware studied. It was observed that great majority of respondents (85%) found agreed that environment moral is duty of every citizen, while 83.33 per cent were agreed that it shall be mandatory to include conservation of natural resources in school syllabus. In all more that half of the respondents (54.17%) had moderately favourable attitude towards management of natural resource management, followed of less favourable attitude (30.83%). Awareness of natural resource management was measured with help of indicators namely, soil, water, energy and forest resource management. When studied extent of awareness it was observed that 45 per cent respondents had high level of awareness of natural resource management practices followed by 43.34 per cent respondents having medium level of awareness. Education of farmers, their scientific orientation and attitude were found to be highly significant with the awareness of natural resource management practices. Most of the respondents expressed the barriers of lack of scientific knowledge (87.5%), increase culture of urbanization (83.33%), lack of social participation (76.67%), limited involvement of local people and absence of institution that protect their interest (75%), lack of strong community based organizations (70.83%) etc. were the barriers in management of natural resources management.

Keywords *: natural resources, management of practices, soil, water, energy, forest, attitude, awareness*

INTRODUCTION

Natural resources occur naturally within environment that exists relatively undisturbed by mankind, in a natural form. A natural resource is often characterized by amount of biodiversity and geodiversity existent in various ecosystems. Many of them are essential for survival while other are used for satisfying our wants. Natural resource may be classified in different ways. Forest, mineral deposit or fresh water are necessary and useful to humans. Practically, these resources are available in their purest form in or around the rural areas.

It is estimated that natural resources due to increasing human interference and changing climate are most prone for deterioration. Therefore, it has become a universal phenomenon to protect the natural resource. Integrated management of natural resources, namely land, water, vegetation, animal and environment on watershed bases has emerged as alogical and the most effective holistic approach for sustainable production and overall development.

The practices regarding natural resource management are imbibed in our culture through various religious and spiritual values. During childhood every Indian used to hear his/her mother's voices saying “do not touch the plants during night, do not pluck the unripe fruits, do not waste water, do notspill water over firewood, do not waste food otherwise you will get punishment from God etc. It has been felt that awareness regarding natural resource management is crucial for sustainability. It is estimated by environment experts that a great harm is being caused to the environment during last 60 years.

In resource conservation, environment management, protection and rehabilitation, results show that involvement of farmer especially rural farmer in planning stage was found to be very low as compared to execution stage of natural resource

conservation. To involve farmer in planning and to reduce gender biasness in planning of natural resource management, level of awareness of farmer should be analyzed. Since Yavatmal district has richness in natural resources, it would be of high significance to find out the management of the same. Farmers have a vital role in environmental management and development. Farmer in rural area plays a predominant role, in the management of natural resources. It is therefore necessary to study the extent of awareness of rural farmer in natural resource management.

Objectives

1. To study the attitude and awareness of farmers on varied aspects of Natural Resource Management Practice.
2. To study the relationship of characteristics of farmers with their awareness towards Natural Resource Management Practice.
3. To identify the barriers in Natural Resource Management Practice.

METHODOLOGY

The present study was conducted in Yavatmal District of Maharashtra State. An exploratory research design of social research was used in the present study.

In Yavatmal District, there are total 16 tahsils out of these, two tahsils namely, Pusad and Umarkhed were selected purposively. These tahsils consist of considerably more forest area.

By considering the higher area under forest, five villages from each selected tahsil were randomly selected for study. From each of the selected tahsils, 5 villages were selected on the basis of maximum area under forest, from each selected village 12 farmers were selected randomly. Thus, from two selected tahsils 10 villages were selected and from these villages total 120 farmers were selected randomly. They were considered as respondents in the present study.

A structured interview schedule consisting relevant questions which were related with the objectives of the study was prepared. After finalization of interview schedule, the data was collected personally by taking interview of the selected respondents.

Awareness of natural resource management was measured with the help of teacher made test, considering the following indicators.

1. Soil resource management.
2. Water resource management.
3. Energy resource management.
4. Forest resource management.

Responses were recorded on point five continuum as fully agree, partially agree, undecided, partially disagree and strongly disagree and score given 5, 4, 3, 2 and 1, respectively.

Obtained awareness score was then converted into awareness index with the help of following formula.

$$\text{Awareness Index} = \frac{\text{Obtained awareness score}}{\text{Obtainable awareness score}} \times 100$$

After getting awareness index of the farmers, they were classified on the basis of equal interval method as low, medium and high.

Barrier is the problems or difficulties faced by the farmers in Management of Natural Resources were recorded from the farmers and analyzed based on frequency, percentage and rank.

RESULTS AND DISCUSSION

Attitude towards NRM

Table 1
Distribution of farmers according to their attitude towards NRM

Sl. No.	Statement	Frequency (n=120)		
		Agree	Undecided	Disagree
1	Only nature is responsible for the deterioration of soil quality	30 (25.00)	40 (33.33)	50 (41.67)
2	It is not possible for humans to maintain water resources in their original form	43 (35.83)	30 (25.00)	47 (39.17)
3	All natural resources, available on land area meant for human consumption	65 (54.16)	45 (37.50)	10 (08.34)
4	Money can buy pure air, clean water and pollution free environment	30 (25.00)	45 (37.50)	45 (37.50)
5	Government is responsible to take care of natural resources	70 (58.33)	36 (30.00)	14 (11.67)
6	Natural resource can be kept safe only by community feeling and awareness	75 (62.50)	30 (25.00)	15 (12.50)
7	It should be mandatory to include conservation of natural resources in syllabus of school education	100 (83.33)	13 (10.83)	07 (05.84)
8	Those who harm the natural resources for their own benefits, should be punished critically by strict enforcement of law	85 (70.83)	27 (22.50)	08 (06.67)
9	A poor person he/she should not be punished if he misuse the natural resource	70 (58.33)	35 (29.17)	15 (12.50)
10	There will be not success without over explanation of natural resource	60 (50.00)	35 (29.17)	25 (20.83)
11	Environment moral is duty of every citizen	102 (85.00)	15 (12.50)	03 (02.50)

(Figures in parenthesis indicate percentage)

In the attitude test of farmers towards natural resource management it is observed from Table 1 that high majority of farmers found agree towards statement of attitude test that environment moral is duty of every citizen (85%), it should be mandatory to include conservation of natural resources in school syllabus (83.33%), those who harm the natural resource for their own benefits, they should be punished critically by strict enforcement of law (70.83%) and natural resources can be kept safe only by community feeling and awareness (62.50%). Similarly, half and more percentage of farmers also found agree that government is responsible to take care of natural resource (58.33%), a poor man should not be punished if he misuse the natural resources (58.33%), all natural resources available on land area meant human consumption (54.16%) and there will be not success without over explanation of natural resources (50.00%).

Further, it was observed that most of the farmers disagree followed by undecided about the attitude statement that only nature is responsible for the deterioration of soil quality (41.67% and 33.33%), it is not possible for humans to maintain water resources in their original form (39.17% and 25%) and money can buy pure air, clean water all pollution free environment (37.50% and 37.50%), respectively.

Table 2
Distribution of farmers according to their level of attitude towards NRM

(n=120)

Sl. No.	Attitude level	Frequency	Percentage
1	Unfavourable	12	10.00
2	Less favourable	37	30.83
3	Moderately favourable	65	54.17
4	Highly favourable	06	05.00
	Total	**120**	**100.00**

Mean = 54.23

Data presented in Table 2 shows that 54.17 per cent farmers were moderately favourable attitude towards natural resource management followed by less favourable attitude of farmers (30.83%) and un favourable attitude of farmers (10%). Least of farmers (5%) found highly favourable attitude towards natural resource management. It clearly indicated that farmers in the study area had moderately to less favourable attitude towards the conservation of natural resources.

In conformity with the present findings Ian Byron (2006) found positive attitude of farmers towards natural resource management in Lachlan Catchment of Australia, Hole (2014) found moderate favourable attitude of farmers towards soil testing recommendations, while Konde (2017) reported less favourable attitude of farmers towards soil reclamation measures. Khavare (2017) has found moderately favourable attitude of orange growers towards drip irrigation and Mohammed Seid Adem (2017) had also found favourable attitude about global and local environmental issues as well as management systems and activities.

Awareness of natural resource management

Table 3
Distribution of farmers according to their awareness of natural resource management

Sl.No.	Statement	Frequency(n=120)				
		FA	PA	UD	PD	SD
	A) Soil resource management					
1	Soil erosion can be prevented by using planting and grasses	52 (43.33)	30 (25.00)	25 (20.83)	13 (10.83)	00 (00.00)
2	Soil erosion in hilly area can prevent by using contour farming	35 (29.17)	38 (31.66)	26 (21.67)	21 (17.50)	00 (00.00)
3	Acidic soil can be made fertile by using lime	42 (35.00)	28 (23.33)	25 (20.83)	20 (16.67)	05 (04.17)
4	When manure and compost of dung is used in harrowing in barren land it can make soil fertile	50 (41.67)	30 (25.00)	25 (20.83)	15 (12.50)	00 (00.00)
5	Excess rainfall increases soil erosion	44 (36.66)	35 (29.17)	20 (16.67)	18 (15.00)	03 (02.50)
6	When sunhemp is used as a green manure in sloppy land it decreases the soil erosion	45 (37.50)	32 (26.67)	30 (25.00)	09 (07.50)	04 (03.33)
7	Continues cropping is deterioration physical condition of soil	53 (44.16)	30 (25.00)	22 (18.34)	12 (10.00)	03 (02.50)
8	Soil erosion is more in grazing area of goats	40 (33.34)	37 (30.83)	20 (16.67)	10 (08.33)	13 (10.83)
9	The soil is more fertile at bank of river, pond and cannel	42 (35.00)	28 (23.33)	32 (26.67)	14 (11.67)	04 (03.33)
10	Soil fertility is decline due to intensive farming	53 (44.16)	28 (23.34)	24 (20.00)	12 (10.00)	03 (02.50)
11	For making of one inch layer of soil it take many thousands years	35 (29.17)	40 (33.33)	24 (20.00)	12 (10.00)	09 (07.50)

12	Problems in existence of micro organism present in soil due to use of chemical insecticides	60 (50.00)	14 (11.67)	22 (18.33)	22 (18.33)	02 (01.67)
13	Quality of soil differ in different climatic zone.	85 (70.84)	10 (08.33)	11 (09.16)	12 (10.00)	02 (01.67)
	B) Water resource management					
1	Rain water is fully absorbed in soil	30 (25.00)	80 (66.67)	06 (05.00)	03 (02.50)	01 (00.83)
2	Soil moisture can be conserved by burring the crop residues in soil	85 (70.83)	15 (12.50)	14 (11.67)	04 (03.33)	02 (01.67)
3	Amount of rainfall and duration decrease due to deforestation	63 (52.50)	25 (20.83)	16 (13.34)	15 (12.50)	01 (00.83)
4	Soil erosion is caused due to continues deforestation	72 (60.00)	20 (16.67)	20 (16.67)	06 (05.00)	02 (01.66)
5	Soil moisture can be conserved by leveling and bunding	60 (50.00)	34 (28.33)	19 (15.83)	07 (05.84)	00 (00.00)
6	Soil moisture can be conserved by ploughing	55 (45.83)	30 (25.00)	22 (18.33)	08 (06.67)	05 (04.17)
7	Soil moisture can be conserved by making farm pond	71 (59.16)	18 (15.00)	18 (15.00)	11 (09.17)	02 (01.67)
8	The main problem of water conservation is evaporation	62 (51.67)	13 (10.83)	27 (22.50)	16 (13.33)	02 (01.67)
9	There may be the scarcity of total available drinking water soon	55 (45.83)	28 (23.34)	25 (20.83)	12 (10.00)	00 (00.00)
10	Drinking of polluted water causes jaundice	90 (75.00)	12 (10.00)	15 (12.50)	03 (02.50)	00 (00.00)
	C) Energy resource management					
1	Solar energy is an important source of energy	95 (79.17)	20 (16.67)	05 (04.16)	00 (00.00)	00 (00.00)
2	Irrigation is possible through the wind mill	45 (37.50)	45 (37.50)	20 (16.67)	10 (08.33)	00 (00.00)
3	Electricity is cheap commercial and non exhaustive source of energy	40 (33.33)	55 (45.83)	17 (14.17)	08 (06.67)	00 (00.00)
4	Fast growing tress should be planted for fuel	70 (58.33)	27 (22.50)	15 (12.50)	06 (05.00)	02 (01.67)
5	The burning of cow dung and wood in village is the misuse of natural resource	60 (50.00)	14 (11.67)	20 (16.67)	13 (10.83)	13 (10.83)
6	Asthma is caused due to air pollution	72 (60.00)	18 (15.00)	21 (17.50)	05 (04.17)	04 (03.33)
	D) Forest resource management					
1	Forest decreases the soil erosion and environmental pollution	97 (80.83)	15 (12.50)	05 (04.17)	02 (01.67)	01 (00.83)
2	Chipko movement is related with cutting of trees	40 (33.33)	28 (23.33)	20 (16.67)	20 (16.67)	12 (10.00)
3	The main cause of worship of tree is the habitat of ghost	75 (62.50)	05 (04.16)	20 (16.67)	18 (15.00)	02 (01.67)
4	Density of forest in an area depends on the climate and rainfall of that area	65 (54.16)	35 (29.17)	18 (15.00)	02 (01.67)	00 (00.00)
5	Flood can be controlled by planting	60 (50.00)	28 (23.33)	22 (18.34)	10 (08.33)	00 (00.00)
6	By the knowledge of agro forestry natural resources can be managed	67 (55.83)	20 (16.67)	25 (20.83)	08 (06.67)	00 (00.00)
7	Environment Day is celebrated on 5 June	10 (08.33)	90 (75.00)	08 (06.67)	07 (05.83)	05 (04.17)

(Figures in parenthesis indicate percentage)

FA- Fully Agree **PA-** Partially Agree **UD-** Undecided **PD-** Partially Disagree **SD-** Strongly Disagree

A) Soil resource management

From Table 3 it was observed that majority i.e.70.84 per cent of farmers had fully agree with quality of soil differ in different climatic zone and 50.00 per cent was fully agree with problem in existence of micro organism present in soil due to use of chemical insecticide. Majority of respondents (44.17% and 25.00%) were fully agree followed by partially agree with that continues cropping is deteriorates physical condition of soil similarly soil fertility is decline due to intensive cropping (44.16% and 23.34%), respectively.

From Table 3 it was also revealed that 43.33 per cent and 25 per cent farmers were fully agree and partially agree with soil erosion can prevented by using planting and grasses, 41.67 and 25.00 per cent was fully agree and partially agree that when manure and compost of dung is use in harrowing in barren land it can make soil fertile. Majority percentage together i.e. 37.50 and 26.67 per cent of farmers had fully agree followed by partial agree towards when sunhemp is used as a green manure in sloppy land it decreases the soil erosion, while 36.66 and 29.17 per cent were fully agree and partially agree that excess rainfall increases soil erosion.

Table 3 indicated that majority of farmers together (35.00% and 23.33%) were fully agree and partially agree that acidic soil can make fertile by using lime and the soil is more fertile at bank of river, pond and cannel and similar proportion of farmers(33.34% and 23.33%) were fully agree and partially agree with that soil erosion is more in grazing area of goats, respectively thereafter, 29.17 per cent of farmers were fully agree with soil erosion in hilly area can prevent by using contour farming and for making of one inch layer of soil it takes many thousand years.

B) Water resource management

Regarding water resource management majority of farmers had full agreement with that drinking of polluted water causes jaundice (75%), soil moisture can be conserved by burning the crop residues in soil (70.83), soil erosion is caused due to continues deforestation (60%), soil moisture can be conserved by making farm pond (59.16%), the main problem of water conservation is evaporation (51.67%) and soil moisture can be conserved by leveling and bunding (50%).

C) Energy resource management

In case of energy resource management majority of farmers were fully agree that solar energy is an important source of energy (79.17%), Asthma is caused due to air pollution (60%), fast growing trees should be planted for fuel (58.33%), and the burning of cow dung and wood in village is the misuse of natural resource (50%).

D) Forest resource management

It is observed from Table 3 that, for the forest resource management majority of farmers were fully agree that forest decreases the soil erosion and environmental pollution (80.83%), the main cause of worship of tree is the habitat of ghost (62.50%), by the knowledge of agroforestry natural resources can be managed (55.83%), density of forest in an area depends on the climate and rainfall of that area (54.16%) and flood can be controlled by planting (50%).

Table 4

Distribution of farmers according to their level of awareness of natural resource management

(n=120)

Sl. No.	Awareness Index	Frequency	Percentage
1	Low	14	11.66
2	Medium	52	43.34
3	High	54	45.00
	Total	**120**	**100**

Mean = 57.80

Data presented in Table 4 shows that 45.00 per cent farmers had high awareness of natural resource management followed by medium awareness of farmers (43.34%), least of farmers (11.16%) found low awareness of natural resource management.

It is clearly indicated that most of the farmers were aware about the natural resource management, but it was only up to 57.80 per cent. That emphasis on the increase of level of awareness and need to convert it in to knowledge for conservation of natural resource management. Similar finding were also reported by Lasso de lavega (2004), O'Brien (2007), Aminrad (2010), Sarkar (2011), Bagri (2012), Harju-Autti (2013), Mohammed Seid Adem (2017).

Relationship between the characteristics of the farmers and awareness of natural resource management

Table 5

Relationship between the characteristics of the farmers and awareness of natural resource management

Sl. No.	Category	Correlation coefficient 'r'
1	Age	0.074NS
2	Education	0.733**
3	Land holding	0.208*
4	Occupation	0.010NS
5	Family size	0.006NS
6	Annual income	0.119NS
7	Social participation	0.638**
8	Sources of information	0.007NS
9	Scientific orientation	0.484**
10	Attitude toward NRM	0.784**

* significant at 0.05 per cent level of probability
** significant at 0.01 per cent level of probability

It is observed from Table 5 that out of ten independent variable age, occupation, family size, annual income, sources of information did not show any relationship with awareness of natural resource management. Land holding had positive and significant relationship with awareness of natural resource management at 0.05 per cent level of probability. Whereas education, social participation, scientific orientation and attitude toward natural resource management had positive and significant relationship with awareness of natural resource management at 0.01 per cent level of probability. The hypothesis set for the variables having no significant relationship with awareness of natural resource management is proved or accepted. It clearly shows that the farmers from higher innovativeness category always characterized with good education, higher land holding, social participation mostly oriented towards practices of natural resource conservation.

Barriers faced by the farmers in natural resource management practices

To study the barriers faced by the farmers in natural resource management practices was one of the objectives of the present study. The barriers are the circumstances or causes which prohibit or restraint the farmers in natural resource management practices.

The data related to barriers faced by farmers in natural resource management practices shown in Table 6.

Table 6
Barriers faced by the farmers in natural resource management practices

(n=120)

Sl.No.	Barriers faced by farmers	Freq.	%	Rank
1	Lack of Scientific knowledge about Natural resource management.	105	87.50	**I**
2	Lack of Social participation in natural resource management activity.	92	76.67	**III**
3	Lack of Strong Community based organization to facilitate Natural Resource Management and Self-help activities.	85	70.83	**V**
4	Limited incorporation of Indigenous practices in land, water and forest policies.	77	64.17	**VIII**
5	Lack of skilled worker and experts in areas of NRM of all levels.	65	54.17	**XI**
6	Lack of decision making ability of farmers.	71	59.16	**IVX**
7	Lack of risk bearing ability of farmers.	82	68.33	**VI**
8	Lack of extension contact.	62	51.67	**XIII**
9	Lack of clear guidelines and enforcing mechanism in the management of Forest and wood-lands.	60	50.00	**XIV**
10	Limited involvement of local people and absence of institutions that protect their interest.	90	75.00	**IV**
11	Limited /No Opportunity for alternative livelihood outside agriculture for rural people.	80	66.67	**VII**
12	Lack of Investment by Private and Informal sector.	58	48.33	**XV**
13	Less contact with KVKs Scientist.	67	55.83	**X**
14	Increase in Industrialization.	63	52.50	**XII**
15	Increasing culture of urbanization.	100	83.33	**II**

It is observed from Table 6 that vast majority of the farmers (87.50%) reported that they have very lack of scientific knowledge about NRM, while 83.33 per cent of farmers reported that increasing culture of urbanization followed by 76.67 per cent of farmers were lack of social participation in NRM.

Data presented in Table 6 shows that 75.00 per cent of the farmers reported that limited involvement of local people and absence of institutions that protect their interest. While 70.83 per cent of farmers reported that they have lack of Strong Community based organization to facilitate Natural Resource Management and Self-help activities, followed by 68.33 had lack of risk bearing ability of farmers and 66.67 per cent farmers had limited /No Opportunity for alternative livelihood outside agriculture for rural people and 64.17 per cent of farmers had limited incorporation of Indigenous practices in land, water and forest policies.

It is revealed from Table 6 that 59.16 per cent of the farmers had lack of decision making ability of farmers. 55.83 and 54.17 farmers reported that less contact with KVKs Scientist and lack of skilled worker and experts in areas of NRM of all levels.

It is further observed that 52.50 and 51.67 per cent farmers reported that increase in Industrialization and lack of extension contact. 50.00 and 48.33 per cent farmers reported that lack of clear guidelines and enforcing mechanism in the management of Forest and wood-lands and lack of Investment by Private and Informal sector.

Paper received on 24.08.2022
Accepted on 20.09.2022

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