

KNOWLEDGE AND ADOPTION OF ORGANIC MANURE PRACTICES BY THE COTTON AND SOYBEAN GROWERS IN AKOLA DISTRICT

S. M. Borhade¹, N. M. Kale^{2*}, V. K. Kharche³ and N. P. Jangwad⁴

¹Ex. PG Student, Department of Extension Education, PGI, Dr. PDKV, Akola

²Associate Professor, Department of Extension Education, PGI, Dr. PDKV, Akola

³Professor, Department of SSAC, PGI, Dr. PDKV, Akola

⁴Assistant Professor, Department of Extension Education, PGI, Dr. PDKV, Akola

ABSTRACT

Present research investigation was carried out in Akola district of Western Vidarbha region of Maharashtra, with exploratory design of social research. Akola tahsil was selected purposively from district. From these tahsil Ten villages and from each village fifteen respondents were selected randomly. Thus this investigation was confined to the population of 150 farmers who cultivate cotton and soybean crops. The results revealed that the medium (48.67%) to low (45.33%) level of knowledge was observed about organic manure practices with cotton and soybean growers. In case of 62.00 per cent cotton growers low level of adoption was noted and 62.00 per cent soybean growers adopt organic manure practices at medium level.

Keywords: Knowledge, Adoption, Constraints, Implications.

INTRODUCTION

Currently about 80 per cent of the fertilizers are consumed in 120 districts constituting less than 33 per cent of the gross cultivated area. Experts point out that the efficiency of fertilizer use in India is only 30-35 per cent as the balance 65-70 per cent under go different losses. The intensity of their use in a few regions and a few crops are causes of serious concern to human health, soil water, environment and thus to the sustainability of agriculture production in the country. It is true that the increasing use of fertilizers and pesticides at high rates has boosted agricultural production in the country. But it has also caused adverse impact on soil and water, as well as environment. Long-term continuous use of high doses of chemical fertilizers alone badly affects the soil physical, chemical and biological properties. Rainfall and excess use of irrigation water cause the alkalinity or acidity of the soils. The pesticides and fertilizers mixed with rain or

irrigated water and contaminate rivers, wells, lakes, *etc.* and also leak into the drainage system, which goes in to the drinking water contaminating the environment. The heavy metals present in the fertilizers, pesticides and sewage sludge leach into ground water.

The use of agrochemicals coupled with the degradation of cultivable land and increasing agricultural pollution has created an unhealthy situation in the country. In order to overcome this situation, organic manure application for cultivating the land and raising crops in such a way as to keep the soil alive and in good condition may be an alternative to the present system of farming solely depending on chemicals.

The Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola has identified and suggested various organic manure practices in respect of improving soil fertility. In Vidarbha most of the farmers cultivate cotton and soybean crop. But the average productivity of both the crop is lowering day by day. As per the Kale (2010) reported that average productivity of cotton and soybean in Vidarbha region is 4.38 q/ha and 6.42 q/ha respectively. The use of organic manure helps to increase productivity of crops. For increasing productivity mostly farmers use inorganic fertilizer but it affects the soil structure, The organic manure not just source of nutrients but they have dominant effect on soil physical properties resulting in better soil structures, better water retention in soil, more favorable environment for root growth and better infiltration of soil water. The direct and residual effects were found with the use of organic manure they are local, eco friendly and sustainable.

Organic Manures: “Organic Manures are the valuable byproduct of farming and allied industries derived from plant and animal sources.” The present study has been planned with following objectives

- 1) To study personal, socio-economic, situational, and psychological characteristics of the respondents.
- 2) To study the knowledge and adoption of organic manures by the respondent in cotton and soybean crops.
- 3) To identify the constraints faced by the respondents in adoption of organic manures.

MATERIALS AND METHODS

Present research investigation was carried out in Akola district of Western Vidarbha region of Maharashtra, with exploratory design of social research. Akola *tahsil* was selected purposively from district. From these tahsil Ten villages and from each village fifteen respondents were selected randomly. Thus this investigation was confined to the population of 150 farmers who cultivate cotton and soybean crops.

Knowledge: English and English (1961) defined knowledge as a body of understood information possessed by an individual. Operationally knowledge has been defined as the body of understood information, possessed by respondents about organic manures. For cotton and soybean crop common statements was prepared regarding the knowledge about the organic manures. A teacher made knowledge test was developed to measure the knowledge of an individual respondents about the organic manures, responses of the respondents were taken on two point continuum i.e. yes/no and numerical score of 1 and 0 was assigned respectively. Obtained knowledge raw score were converted into knowledge index by using following formula.

Knowledge score actually obtained

$$\text{Knowledge index} = \frac{\text{-----}}{\text{Maximum obtainable knowledge score}} \times 100$$

The respondents were categorized according to obtained knowledge index score with equal interval method as low (Upto 33.33), medium (33.34 to 66.66) and high (Above 66.66) level of knowledge of organic manure.

Adoption: Rogers (1983) defined adoption as the decision to make full use of innovation as the best course of action available. Adoption in present study was defined as actual use of organic manures by the respondents in cotton and soybean crops. For measurement of adoption level of organic manures a list of organic manure practices was prepared in consultation with soil scientist of the university.

The objectives type questions were advocated on recommended organic manures for cotton and soybean crops. The responses of the respondents were elicited on three point continuum full adoption, partial adoption and non-adoption. A score of 2, 1 and 0 was assigned respectively. The raw adoption score obtained by an individual respondent were converted into adoption index as below.

Actually obtained adoption score

$$\text{Adoption index} = \frac{\text{-----}}{\text{Maximum obtainable adoption score}} \times 100$$

The respondents were categorized according to obtained adoption index score with equal interval method as low (Upto 33.33), medium (33.34 to 66.66) and high (Above 66.66) level of adoption of organic manure.

RESULTS AND DISCUSSION

Knowledge: Majority (82.66%) of the respondents had not knowledge about the different kinds of organic manure. i.e. bulky organic manure and concentrated organic manure whereas 17.33 per cent respondent knows about this difference. Over half (52.00%) of the respondents were possess knowledge about alternative practices to FYM in organic manure followed by remaining 48 percent respondents had no knowledge about it, while majority (60.00%) of the respondents were not known the technical method of compost preparation and 40 percent respondents know about compost preparation methods.

Majority (92.00%) of the respondents had no knowledge about green manure practices and only 8 percent respondents had knowledge of this practice. Dr. PDKV, Akola recommended 10t/ha FYM for cotton crop and 5t/ha for soybean crop but it was observed that majority (94.00%) respondents had not detail knowledge about these recommended doses only 6 percent respondents were having knowledge about the recommended doses of FYM.

Table 1-Distribution of the respondents according to their knowledge of organic manure practices in cotton and soybean crop

Sr. No.	Statements	Respondents	
		Yes	No
A)	Knowledge about organic manure practices		
i)	Knowledge about different kinds of organic manure a) Bulky organic manure b) Concentrated organic manure	26 (17.33%)	124 (82.66%)
ii)	Knowledge about alternative method of FYM like compost making, vermicompost, green manure.	78 (52.00%)	72 (48.00%)
B)	Knowledge about method of compost preparation	60 (40.00 %)	90 (60.00%)
C)	Knowledge about green manure practices	12 (8.00%)	138 (92.00%)
D)	Knowledge about recommendation of organic manure for cotton and soybean crop. i) 10t/ha for cotton ii) 5t/ha for soybean	9 (06.00%)	141 (94.00%)
E)	Knowledge about vermicompost technology	44 (29.33%)	106 (70.67%)

In case of vermicompost technology majority (70.67%) of the respondents had not detail knowledge about vermicompost preparation only 29.33 per cent respondents were aware about the vermicompost preparation. The overall knowledge of the respondents about all suggested organic manure practices for cotton and soybean crop was ascertained on the basis of knowledge level of the respondents about all practices, and the results were depicted in Table 2.

Table 2- Distribution of the respondents according to their level of knowledge about organic manure practices

Sr. No.	Knowledge level	Respondents	Percentage
1	Low (Upto 33.33)	68	45.33
2	Medium (33.34 to 66.66)	73	48.67
3	High (Above 66.67)	09	06.00
	Total	150	100

The distribution from Table 2 revealed that nearly half (48.67%) of the respondents possessed medium level of knowledge, followed by 45.33 per cent were having low level of knowledge and remaining 6 percent of respondents had high level of knowledge about organic manure practices.

Thus, this study concludes that nearly half of the farmers having medium to low level of knowledge about organic manure practices hence there is a tremendous scope to raise the knowledge level of the farmers about organic manures in study area.

Adoption: The distribution of respondents according to practice wise adoption has been depicted in Table 3. The data shows that majority (98.00%) of the respondents partially adopt bulky organic manure in cotton crop and in case of soybean crop half of the respondents (50.00%) fully adopt bulky organic manure and remaining half of the respondents adopt it partially. In case of concentrated organic manure not a single respondent adopt it in both cotton and soybean crop. i.e. concentrated organic manure application in both the crop is zero.

Table 3- Distribution of the respondents according to the practise wise adoption of organic manure practices in cotton and soybean crop

Sr. No.	Practices	Cotton Respondents (n=150)			Soybean Respondents (n=150)		
		Fully	Partial	No	Fully	Partial	No
1.	Use of bulky organic manure FYM / Compost/ Vermicompost =10 t/ha for cotton , 5 t/ha for soybean	2 (1.33)	147 (98.00)	1 (0.67)	75 (50.00)	75 (50.00)	0 (00.00)
2.	Use of concentrated organic manure. Neem cake, Castor cake, Cotton cake, Bone meal	0 (00.00)	0 (00.00)	150 (100.00)	0 (00.00)	0 (00.00)	150 (100.00)
3.	Quantity of FYM applied @10t/ha for cotton @ 5t/ha for soybean	2 (1.33)	146 (97.33)	2 (1.33)	72 (48.00)	75 (50.00)	3 (2.00)
4.	Whether the green manuring is done? Dhaincha, Sunhemp, Shewari, Mung	0 (00.00)	10 (6.67)	140 (93.33)	0 (00.00)	8 (5.33)	142 (94.67)
5.	Organic manure applied on the basis of soil testing	0 (00.00)	85 (56.67)	65 (43.33)	45 (30.00)	52 (34.67)	53 (35.33)

The recommendation of FYM in cotton crop is 10t/ha and 5t/ha for soybean crop. Majority (97.33) of the respondents adopted partially this recommended dose in cotton and in case of soybean half (50.00%) of the respondents used it partially followed by 48 percent respondents use this recommended dose of FYM at fullest extent. In case of green manure application majority (93.33%) of the respondents were not adopted green manure in cotton, remaining 6.67 percent respondent used green manure partially in cotton. Maximum (94.67%) respondents were not adopting green manure in soybean and only 5.33 percent use partially in soybean. It is quite logical that vast opportunity in adoption of organic manure practices is due to unawareness of recommended practices, lack of input supply and lack of technical guidance. The data about overall level of adoption about all recommended organic manure practices has been depicted in Table 4

It is apparent from the Table 4 that Majority (62.00%) of the respondents comes under low level of adoption about organic manure practices in cotton crop, followed by 38.00 per cent respondents had medium level of adoption about organic manure practices and in case of soybean crop maximum 62.00 per cent respondents had medium level of adoption of organic

manure practices, and 35.33 per cent respondents were having low level of adoption of organic manure practices.

Table 4- Distribution of the respondents according to their overall level of adoption of organic manure practices

Sr. No.	Adoption Level	Cotton		Soybean	
		Respondents	Percentage	Respondents	Percentage
1.	Low	93	62.00	53	35.33
2.	Medium	57	38.00	93	62.00
3.	High	00	00.00	04	02.67
	Total	150	100.00	150	100.00

Thus, this study concludes that maximum (62.00%) of the farmers having low level adoption of organic manure practices in cotton crop and maximum (62.00%) respondents having medium adoption level in soybean crop hence there is a tremendous scope to raise the adoption level of organic manures by the farmers in study area.

Constraints faced by the farmers: While studying the constraint analysis from Table 5 it was observed that lack of knowledge about recommended quantity of FYM (56.66%) was one of the major constraints encountered by the respondents, inadequate source of finance (50.00%), high cost of bullock pair (46.67%), inadequate and timely availability of FYM (40.00%), were the constraints encountered by the respondents.

Table 5- Distribution of the respondents according to their constraints faced during adoption of organic manure practices

Sr. No.	Characteristics	Respondents	
		Numbers	Percentage
I	Use of Bulky Organic Manure		
1	Lack of knowledge about recommended quantity of FYM	85	56.66
2	Inadequate source of finance	75	50.00
3	Inadequate and timely availability of FYM	60	40.00
4	High cost of bullock pair.	70	46.67
II	Use of concentrated organic manure		
1	Lack of knowledge about concentrated organic manure.	124	82.66
2	Less awareness and negligence towards it.	120	80.00
3	Inadequate source of finance	70	46.66
4	Lack of timely guidance	85	56.66

III	Use of green manure		
1	Lack of knowledge about green manure practices.	138	92.00
2	Inadequate source of finance	90	60.00
3	Inadequate rainfall	100	66.66
4	Less awareness and negligence towards it	120	80.00
IV	Use of Vermicompost preparation		
1.	Lack of knowledge about Vermicompost preparation	106	70.67
2.	Inadequate source of finance	80	53.33
3.	Less availability of earthworm culture	120	80.00
4.	Complicated method	50	33.33

In case of use of concentrated organic manure 82.66 percent respondents had lack of knowledge about concentrated organic manure, majority (80.00%) of the respondents had less awareness and negligence towards the concentrated organic manure, lack of timely guidance (56.66%) and inadequate source of finance(46.66%) are the constraints encountered by the respondents.

Regarding the practice like use of green manure majority (92.00%) of the respondents had lack of knowledge about green manure practices, followed by 80.00 per cent respondents had less awareness and negligence towards the green manure technology, 66.66 per cent respondents were not adopt green manure technology because of inadequate rainfall and 60.00 percent respondents had inadequate source of finance are the constraints encountered by the respondents in adoption of organic manure.

Among the practice like use of vermicompost technology it was observed that less availability of earthworm culture was the major constraint encountered by the majority (80.00%) of respondents. lack of knowledge about vermicompost preparation (70.67%), inadequate source of finance (53.33%) and 33.33 percent respondents not use this method because of its complication.

By summing up the constraint analysis it was concluded that lack of knowledge about organic manures, inadequate source of finance, less awareness and non availability of organic manures were the constraints with the proportionality larger respondents. It is necessary to overcome these constraints for increasing the awareness and adoption of organic manure practices by the respondents in study area.

CONCLUSION

The findings emerged out that majority of the farmers having medium to low level of knowledge and adoption about organic manure practices hence this study implied that extension

functionaries should create awareness among the farming community about various organic manure practices, it will definitely be useful for increasing the adoption level and indirectly to raise the productivity of various crops. It will also be useful to maintain the soil health. In this context, it is also suggested that the information regarding these practices should be disseminated to the cotton and soybean growers by extension functionaries of state department of agriculture, Proprietor of Krishi Seva Kendra's, NGOs, Agriculture universities, etc through demonstration, workshop, seminars, distribute the leaflet, folders, and other printed materials etc for imparting knowledge about organic manure practices.

The results of the study revealed that majority (92.00%) of the respondents possess organic manure less than requirement. In another side it was observed that 70.67 per cent of the respondents had medium level animal possession hence these study implied that motivate the farmers to rear the animals it will help to raise the availability of FYM in study areas and will also give income for this subsidiary occupation. Less availability of earthworm culture was the constraints encountered by the majority (80.00%) of the respondents hence these study implied that state department of agriculture should provide abundant quantity of earthworm culture to the farmers.

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