Website : www.asthafoundation.in
Progressive Research : An International Journal
Vol 17 (2) : 149-151 (July-2022), Print ISSN : 0973-6417, Online ISSN : 2454-6003
Society for Scientific Development in Agriculture and Technology, Meerut (U.P.) India

Perceptions of Farmers on Compost and Inorganic Fertilizers in Soil Fertility Improvement in Kataiya of Sattar Kataiya Block of Saharsa District in Bihar

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Abstract

The present study was conducted to assess farmer's perceptions and attitude on compost and chemical fertilizer to soil fertility improvement at Kataiya village in Saharsa district of Bihar. Total of 65 farmers were selected for the study. In the present study, Farmers perception were identified in the usages of compost and chemical fertilizers. Therefore, farmers have given less attention to compost either for the fertility of the soil or the yield of crops. In contrast they given more attention towards the usages of chemical fertilizers. Factors decreasing the usages of compost were identified: lack of knowledge, labour force requirement and training. For the most part, the present study demonstrated that farmers did not give enough consideration regarding compost. Principally, they favoured compost for the creation of yield and soil fruitfulness. The recommendation was given as creating awareness among farmers about the importance of compost to soil fertility while compared with chemical fertilizers.

Key words : *Compost, inorganic fertilizer, farmers, perception, fertility.*

Introduction

Achieving food security, addressing climate change and halting environmental and natural resources degradation are among the key challenges, the agricultural sector faces in effects to achieve sustainable development (1, 2). Agriculture is one of the largest contributions of greenhouse gas emission derived from livestock farming and emission from agricultural soils. Being part of the problem, agriculture is also part of the solution to climate change impacts of agricultural soil are properly managed. Soil fertility and plant nutrition are important component of plant production. Productive capacity of soils requires the provision of adequate and balanced amount of nutrients to ensure proper growth of plants (3). In an attempt to boost crop production, farmers use both mineral and organic fertilizer to increase the condition of crop growth. Replacement of a part of chemical fertilizers by organic manure through a simple technique of using minimum effective dose of sufficient and balanced quantities of organic and inorganic fertilizers called integrated nutrient management (4, 5). Fertilizers play a very important role in increasing the crop output and ensuring food security. However, the over use of chemical fertilizers has led to serve environmental issues such as land degradation, non-profit source pollution and greenhouse gas emission (6). Soil degradation effects the soil fertility with its influence on physical, chemical and biological properties and nutrient availability (7, 8). Reduction of chemical fertilizer use is needed to mitigate these negative effects which can be done while still meeting country's food demand. It is widely recognized that organic fertilizer can significantly improve soil quality and nutrition, farm productivity and avoid adverse environmental impact.

In view of the above facts and with an objectives to identify the level of awareness of farmers on compost application for soil fertility improvement and to identify the farmer's attitude in compost application for soil fertility improvement, the present investigation was undertaken.

Materials and Methods

Description of study area : Kataiya is a small village in Sattar Kataiya block in Saharsa district of Bihar state, India. It comes under Kataiya Panchayat. It belongs to Koshi division and located 13 kilometre towards North from district headquarter Saharsa, 2 kilometre from Sattar Kataiya block. It is situated at an elevation of 48 meter above mean sea level and it has mean annual temperature 29.59 ^{o}C and receive average annual rainfall 1050 mm.

Design of study : This study was conducted to assess the farmer's perception and attitude on compost application for soil fertility improvement in Kataiya village.

Study population : The source of the population for this study are farmers of Kataiya village.

Sample and sampling technique : The sampling frame was list that contains the total population of the study area, out of which the sample was going to be selected with the help of (9) formula. Sample size (n=65) was determine from the total population of farmers N= 1272.

Received : June-2021; Revised : June-2021; Accepted : July-2022

Table-1: Respondents farming type.

Respondents			
No.	**Type of farming**	**Frequency**	**Percentage**
1.	Crop production farming	22	33.85
2.	Livestock husbandry	10	15.38
3.	Both crop production farming and livestock husbandry	33	50.77

Table-2 : Respondent response on what types of fertilizer they use for soil fertility improvement.

Respondents			
No.	**Type of fertilizer used by farmers**	**Frequency**	**Percentage**
1.	Inorganic / chemical fertilizer	32	49.23
2.	Compost	12	18.46
3.	Both inorganic fertilizer and compost	21	32.31

Table-3 : Perception of respondent about the preparation and usages of compost.

Respondent			
No.	**Factors**	**Frequency**	**Percentage**
1.	It requires more labour	40	61.54
2.	It takes time to prepare	13	20.00
3.	Lack of knowledge about the method of preparation	7	10.77
4.	Lack of motivation from the concerned organization	5	7.69

Methods of data collection : The methodology used for this research was questionnaires which are prepared directly for the farmers. The data was collected from farmer's response directly moving to their house to house

Data analysis and interpretation method : The data was analyzed by quantitative means, using chart, percentage and table that information was gained from farmers or respondents.

Results and Discussion

Based on the finding of the study area the following analysed data are observed. As Table-1 indicated the most of the farmers about 33 (50.77%) of the total sample were dependent on both crop production farming and livestock husbandry, types of farming. From the general overview of the study area about 22 (33.85%) and 10 (15.38%) of farmers depended on crop production farming and livestock husbandry. Generally, the majority of the Kataiya village farmers depended on both crop production and livestock husbandry. As observed from the table-2, the majority of the Kataiya village farmers used chemical fertilizers for the fertility of the soil. Around 32 (49.21%) of them used inorganic chemical fertilizers such as urea and DAP and 21 (32.31%) of the farmers used both compost and chemical fertilizers as fertilizing agent; from these only a few numbers, 12 (18.46%) of them dependent on compost for soil fertility improvement. In tabla-3 indicated that most of the farmer of Kataiya village around 40 (61.54%) replied that compost preparation require labour force. They also said that it requires digging pits in which locally available materials such as leaf of trees, cow dungs, waste from kitchen and farm should be collected and long lasted until it is used as fertilizer and 13 (20.00%) farmers replied that compost preparation take much time, 7 (10.77%) farmers replied that lack of knowledge how to prepare compost. A few farmers replied that lack of motivation 5 (7.69%) from concerned bodies such as developmental agents to prepare and use compost. As Table-4revealed that most of the farmers 33 (50.77%) of the Kataiya village has weak perception on compost usage as fertilizer for the improvement of soil fertility in order to get good harvest, around 11 (16.92%) farmer have very weak population on compost usage, around 15 (23.08%) farmer have very strong perception and a few 6 (9.23%) has strong perception on compost usage. Astable-5indicate that farmer's perception of inorganic fertilizer. The respondent's feedback foe questionnaires were collected and estimated as a percentage by using comparison phrases likeweak, very weak,strong and very strong. Majority of the respondent had good perception for the usage of inorganic fertilizer while compared with organic fertilizers and a few of the farmers had negative perception to inorganic fertilizer in contrast they had positive perception to compost. Some of the farmers also had good perception of inorganic fertilizers.

Majority of the farmer's around 32 (49.23%) replied that they perceive in using inorganic chemical fertilizers very strongly and around 12 (18.46%) have a strong perception on using inorganic fertilizer and farmers around 16 (24.62%) have a weak perception on using chemical fertilizers for this they do have their own response like the cost of chemical fertilizer is high.

As shown in the table-6 very few farmers 2 (3.07%) of Kataiya village replied that the level of yield of crops per

Table-4 : Perception of farmers on compost usages.

No.	Perceptions	Frequency	Percentage
1.	Weak	33	50.77
2.	Very weak	11	16.92
3.	Strong	06	9.23
4.	Very strong	15	23.08

Table-5 : Farmer's perceptions of inorganic fertilizer.

No.	Perceptions	Frequency	Percentage
1.	Weak	16	24.62
2.	Very weak	05	7.69
3.	Strong	12	18.46
4.	Very strong	32	49.23

Table-6 : Farmer's response to the level of the yield of crops per year by using compost and inorganic fertilizers.

	Respondent	Frequency	Percentage
	Level of the yield of the crop		
Type of fertilizer	Very high	21	32.31
	High	34	52.31
	Medium	08	12.31
	Low	02	3.07
Inorganic fertilizer	Very high	35	53.85
	High	16	24.62
	Medium	08	12.30
	Low	06	9.23

year by using compost as fertilizer is low and most of the farmers 34 (52.31%) replied that their level of yield of crops per year by using compost is high. From those 21 (32.31%) replied that their level of yield of crops peryear is very high and around 8 (12.31%) of crop yield is medium.As compared to that of chemical fertilizer with the usage of compost most of the farmers around 35 (53.85%) replied that their level of yield of crops per year by inorganic fertilizers is very high, 16 (24.62%) indicated a high yield, 8 (12.30%) said a medium yield was obtained and the other few in number 6 (9.23%) replied that the level of yield of crops per year by using inorganic fertilizer is low.

In the present study, farmer's perception on compost was not totally ignored. This is because of usage of either inorganic or organic fertilizer varied in estimated percentage.

The negative perception of farmers imply that a unit increase in age and distance of the farm from the home stead of the farmers decreases the probability to the use of compost.

Conclusions

From the finding of this study it was concluded that most of the Kataiya village farmers were depend on both crop production and livelihood husbandry. Farmer's perception on compost application for soil fertility management in the study area was very good, however almost all of them were not well skilled. Moreover, lack of motivation from organization on how to prepare the compost is a major constraints. It was concluded that if training is provide to the farmers it would solve the problems that hinder them to use of compost for soil fertility improvement.

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