A study on Awareness of Farmers about Agri Waste Management practices in Medak district of Telangana

ABSTRACT

Agriculture wastes are the residuals from the growing agriculture crops horticulture and livestock. This paper focused on study on level of awareness of the respondents about agri waste management practices and its relationship with the profile of the farmers.. The Ex-post facto research design was adopted for the study. Thus a total of 120 respondents were selected by following simple random sampling method covering Medak district of Telangana state. From the analysis,it was found that majority of the farmers (55.00%) had high level of awareness, followed by medium (27.50%), and low (17.50%) level of awareness about agri waste management practices. From the analysis, it was found that infrastructure facilities and achievement motivation had positive and significant relationship with awareness at one percent level of significance. The variables age, education, farm size, farming experience, cropping pattern, innovativeness, information seeking behavior and training undergone had positive and significant relationship with awareness at five per cent level of significance. However cropping intensity and level of aspiration had positive and non-significant relationship with level of awareness about agri waste management practices. Government should provide subsidy on the purchase of machinery, special programmes need be to taken to improve awareness about agri waste management and encourage custom hiring centers to reach high cost technologies to the farners. Agri waste based communities need to be developed at ground level for the adoption and dissemination of agri waste management practices.

Keywords : Agriwaste management, awareness

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INTRODUCTION

Every year India produce 550 million tonnes of agriculture waste. More than 149 mt of the to residue is un-used, within that 90 mt of residues burned (MNRE, 2018). Telangana generates about 28.89 million tones of agriculture waste. After meeting the requirements surplus residue was 6.96 million tonnes, out of which 2.73 million tonnes were burnt. Ministry of Renewable and Energy Resources, estimates that agri-waste can generate more than 18000 million tones of power every year apart from generating green fertilizers to farms[1].

Agricultural waste is a serious economic, environmental and social problem and there is a need to analyze different types of waste produced in production, processing and management practices for better utilization of agricultural waste materials. By waste management all the crop wastes are placed in the right time and right place for best utilization in order to convert into useful products and control of pollution. Agri waste management practices integrate principles of crop production, sustainability of soil and environment quality. Major practices related to on farm agri waste management practices furnished below:

1. Vermicompost It is the product of the decomposition process using various species of worms, to create a mixture of decomposing agri waste,bedding material and vermicast.

2. Compost It is organic matter that has been produced by decomposing agri waste in a process called composting. This process recycles various organic materials otherwise regarded as waste products and produces a soil conditioner. Or a mixture of various decaying organic substances, as dead leaves or manure, used for fertilizing soil.
3. Silage making Silage is the material produced by controlled fermentation, under anaerobic conditions chopped agri waste or forage with high moisture contents. Silage is produced by the activities of naturally occurring bacteria that convert some of the plant sugar into organic acids that preserve nutritional qualities.
4. *Insitu* incorporation The harvested crop stalks /stubbles chopped into small pieces and incorporated into the soil with varying efficiencies depending upon the left over crop residue. It improves the soil physical properties and hence, results in increased crop yield.

Agri waste management helps framers to reduce cost on fertilizers and increasing yield of crops. Creates low-skill jobs at local level (vermi-compost). Agri waste conversion reduces waste flow into air and water. Reduces greenhouse gas emissions such as carbon dioxide and nitrous oxide. Incorporation of agri waste into soil or retention on the surface increases hydraulic conductivityimproves water holding capacity and reduce bulk density of soil by modifying soil structure and aggregate stability. Reduces evaporation from the upper strata of soil helps in increasing crop yield in different cropping systems and climatic situations. The agri waste act as a reservoir for plant nutrients, prevent leaching of nutrients and reduce the weed infestation.Provide congenial environment for biological N_2 fixation, increase microbial biomass and enhance activities of enzymes such as dehydrogenase and alkaline phosphatase. Increased microbial biomass can enhance nutrient availability in soil.

Keeping this in view this study is proposed to know the agri waste management practices and their utilization in agriculture and allied sectors by the farmers.

METHODOLOGY

An *Ex-post* facto research design was followed for the study. *Ex-post-facto* research design is a systematic empirical enquiry in which the dependent variables have not been directly manipulated because they have already occurred or they are inherently not manipulated. Keeping in view of the type of variables under consideration, size of respondents and phenomenon to be studied, the *Ex-post-facto* research design was selected as an appropriate research design to investigate the variables.

The State of Telangana was choosen since the researcher was familiar with local language and culture. Medak district of Telangana state was selected. Four mandals (an administrative unit below the district level and consisting of a group of villages and/or panchayats) in the district and two villages from each mandal were selected using simple random sampling technique. Thus, a total of eight villages were selected. From each village 15 respondents were selected using simple random sampling technique thus constituting 120 respondents for the study.

The data from the respondents were collected with the help of interview schedule. The data collected was analysed and interpretations were drawn based on results. The statistical techniques of frequency, percentage, exclusive and inclusive class interval were adopted for analyzing data.

RESULTS AND DISCUSSION

The data was collected from the respondents about level of awareness of agri waste management practices analysed, interpreted, and accordingly the following results and conclusion were drawn.

1. LEVEL OF AWARENESS OF THE RESPONDENTS ABOUT AGRI WASTE MANAGEMENT PRACTICES

Awareness as a stage at which an individual comes to know about the existence of new idea or practice [2]. In this study awareness operationally defined as individual knowing about existence of agri waste management practices. A schedule was developed with 40 statements comprising of various waste management practices and agri waste uses. For quantifying the data, each statement was given score of 2 for "yes" response and 1 for "no" response. The score of all the statements summed up to arrive at a total score of each respondent. The maximum and minimum possible scores to be obtained by the respondents were 80 and 40 respectively. Whereas the obtained maximum score was 75 and minimum score was 46. Accordingly the respondents were classified into three groups by using exclusive class interval technique.

The results in the table 1. indicated that majority of the farmers (55.00%) had high level of awareness, followed by medium (27.50%), and low (17.50%) level of awareness about agri waste management practices.

Table 1. Distribution of farmers according to their level of awareness about agri waste management practices n=120

S.No.	Category	Frequency	Percentage
1	Low (46-55)	21	17.50
2	Medium (55-64)	33	27.50
3	High (64-75)	66	55.00
Total		**120**	**100.00**

The high level of awareness of farmers about agri waste management practices might be due to the fact that majority of the respondents grouped under medium to high farming experience, this might had exposed them to the agri waste management practices and respondents had medium information seeking behavior which imply that the farmers might have accessed agri waste management information sources[3] .

Table 2. Distribution of farmers according to their level of awareness about rice waste management practices n=120

Crop	Waste	Practices /uses	Frequency	Percentage
Rice	**Straw**	Vermi-compost/compost	72	60.00
		Manure preparation	48	40.00
		Straw board and card board	18	15.00
		Animal feed and bedding material	92	76.66
		Mulching material	60	50.00

		Nursery bedding material	76	63.33
		Insitu incorporation	80	66.00
	Husk and Bran	Poultry litter	33	27.50
		Energy source for brick klin	26	21.66
		Packing material	39	32.50
		Animal feed	92	76.66

From the table 2 it was observed that among different practices of straw management 76.66 per cent of the farmers were aware about uses of straw as animal feed and bedding material followed by *insitu* incororporation (66.00%), nursery bedding material (63.33%), comopost/vermicompost (60.00%) mulching material (50.00%), manure preparation (40.00%) and card board preparation (15.000%).

It's also observed from the table 2 that among different ways of managing rice husk 76.66 per cent of the farmers aware about uses of husk as animal feed, followed by packing material (32.50%), poultry litter (27.50%), and energy source for brick klin (21.66%) respectively [4] .

Table 3. Distribution of farmers according to their level of awareness about sugarcane waste management practices n=120

Crop	Waste	Practices /uses	Frequency	Percentage
Sugarcane	**Trash**	Compost	46	38.33
		Animal feed (Tops)	24	20.00
		Mulching material	33	27.50

It could be observed from the table 3 among different ways of managing sugarcane trash, 38.33 per cent of the farmers were aware about use as compost, followed by (27.50%), mulching material and (20.00%) animal feed [5].

Table 4. Distribution of farmers according to their level of awareness about maize waste management practices n=120

Crop	Waste	Practices /uses	Frequency	Percentage
Maize	**Stover**	Vermi-compost	72	60.00
		Manure preparation	48	40.00
		Mulching material	36	30.00
		Insitu incorporation	76	63.33

		Animal feed	85	70.83
	Green leaves(sweet corn)	Silage making	24	20.00
		Animal feed	92	76.66

From the table 4 it was observed that among different ways of managing maize stover, 70.83 per cent of the farmers were aware about use as animal feed, followed by insitu incorporation (63.33%), vermin compost/compost (60.00%), manure preparation (40.00%) and mulching material (30.00%).

It could be observed from the table 4 revealed that among different ways of managing maize green leaves 76.66 percent of the farmers aware about use as animal feed and silage making (20.00%).

Table 5. Distribution of farmers according to their level of awareness about Redgram waste management practices n=120

Crop	Crop waste	Practices /uses	Frequency	Percentage
Redgram	**Stubbles and husk**	Compost	03	02.50
		Animal shelter	12	10.00
		Animal feed (husk)	18	15.00
		Fuel	30	25.00

From the table 5 it was observed that among different practices of managing redgram stubbles, 25.00 per cent of the farmers were aware about use as fuel, followed by animal feed (15.00%), animal shelter (10.00%), and compost (2.50%).

Table 6. Distribution of farmers according to their level of awareness about cotton waste management practices (n=120)

Crop	Crop waste	Practices /uses	Frequency	Percentage
Cotton	**Stalks**	Compost	14	11.66
		Fuel	82	68.33
		Mulching material	78	65.00

From the results in the table 6 indicated that among different practices of managing cotton stalks, 68.33 per cent the farmers were aware about use as fuel, followed by mulching material (65.00%) and compost (11.66%).

Table 7. Distribution of farmers according to their level of awareness about vegetable and fruit crops waste management practices (n=120)

Crop	Crop waste	Practices /uses	Frequency	Percentage

Vegetable and fruit crops	**Damaged fruits and vegetables and dead plants**	Compost	32	26.66
		Animal feed	48	40.00
		Nursery bedding material	18	15.00

From the table 7 it was revealed that among different practices of managing damaged fruits and vegetables, 40.00 per cent of the farmers were aware about use as animal feed, followed by compost (26.66%), and nursery bedding material (15.00%).

Table 8. Distribution of farmers according to their level of awareness about livestock waste management practices (n=120)

Enterprise	waste	Practices /uses	Frequency	Percentage
Live stock	**Dung and urine**	Biogas	73	60.83
		Vermi composting	79	65.83
		Manure preparation (FYM)	85	70.83
		Bio insecticide	29	24.16
		Dung cake	76	63.33

The results in the table 8 indicated that among different practices of managing dung and urine 70.83 per cent of the farmers were aware about use as manure preparation (FYM), followed by vermi-compost (65.83%), dung cake (63.33%), biogas (60.83%) and bio-insecticide (24.16%).

2. RELATIONSHIP BETWEEN SELECTED PROFILE CHARACTERISTICS OF THE RESPONDENTS WITH THEIR LEVEL OF AWARENESS ABOUT AGRI WASTE MANAGEMENT PRACTICES

Null hypothesis : There will be no significant relationship between the level of awareness about agri waste management practices and the profile characteristics of the respondents.

Table 9. Relationship between selected profile characteristics of the respondents with their level of awareness (n=120)

S. No.	Profile characteristics	Calculated (r) Value
1.	Age	**0.192 ***
2.	Education	**0.182***
3.	Farm size	**0.181***
4.	Farming experience	**0.216***
5.	Cropping Intensity	**0.117NS**
6.	Cropping pattern	**0.191***

7.	Infrastructure	**0.251****
8.	Level of aspiration	**0.172NS**
9.	Innovativeness	**0.193***
10.	Achievement motivation	**0.253****
11.	Information seeking behaviour	**0.212***
12.	Training undergone	**0.234***

**** Significance at 0.01 level**

*** Significant at 0.05 level**

Empirical hypothesis : There will be significant relationship between the level of awareness about agri waste management practices and the selected profile characteristics of the respondents.

Age Vs Awareness

From the findings it is evident that age had positive and significant relationship with awareness about agri waste management. The reason might be majority of the famers belonged to middle age with medium level of farming experience [6].

Education Vs Awareness

From the findings it was found that there was a positive and significant relationship between education and awareness. The reason might be that most of the farmers were literate and it might have helped them to access information from different sources like magazines, journals, news papers and agriculture officers about agri waste management [7].

Farm size Vs Awareness

From the findings it was found that farm size was positively and significantly correlated with awareness about agri waste management. The reason might be attributed to the fact that diversified farming in the study area increases the scope for having more exposure about different types of agri waste and their management practices [8] .

Farming experience Vs Awareness

Farming experience was found to be positively and significantly correlated with awareness about agri waste management. A farming experience increases awareness about various innovative practices of agri waste management and its utilization in agriculture, might have also increased [9] .

Cropping intensity Vs Awareness

Cropping intensity was found to be positively and non significantly correlated with awareness about agri waste management. The reason might be majority of respondents were small farmers and dependent on rainfed farming.

Cropping pattern Vs Awareness

Cropping pattern was found to be positively and significantly correlated with, awareness about agri waste management. The reason might be attributed to the fact that more diversified farming make farmers to access more information about agri waste products and their management.

Infrastructure Vs Awareness

Infrastructure facilities was found to be positively and significantly correlated with awareness about agri waste management. Increased awareness about agri waste management might have encouraged farmers to establish on farm facilities to lead the benefits out of it [8].

Level of aspiration Vs Awareness

Level of aspiration was found to be positively and non significantly correlated with, awareness about agri waste management. The reason might be that majority of the respondents were with poor of infrastructure facilities and other resources required for management of agri waste.

Innovativeness Vs Awareness

Innovativeness was found to be positively and significantly correlated with, awareness about agri waste management. An innovative farmer always tries to adopt new technologies and willing to bear risk involved in adoption. This nature might led them to access more information about technology in order to minimize the risk involved in adoption of the technology [9].

Achievement motivation Vs Awareness

Achievement motivation was found to be positively and significantly correlated with awareness about agri waste management. The reason might be that motivation facilitate the farmers to identify suitability of technologies and access more information about agri waste management[10].

Information seeking behavior Vs Awareness

Information seeking behavior was found to be positively and significantly correlated with, awareness about agri waste management. The result might due to the fact that more exposure and access to the different information sources favours to develop more awareness about agri waste management practices [9].

Training undergone Vs Awareness

From the results it was observed that training received had a significant and positive correlation with awareness about agri waste management. The reason might be the trainings provides knowledge and skills about different agri waste management practices and helps in building up awareness among respondents [11].

Conclusion:

The high level of awareness of farmers about agri waste management practices might be due to the fact that majority of the respondents grouped under medium to high farming experience, this might had exposed them to the agri waste management practices and respondents had medium information seeking behavior which imply that the farmers might have accessed agri waste management information sources.

Correlation analysis of the level awareness about agri waste management practices and profile characteristics of respondents revealed that infrastructure facilities and achievement motivation had positive and significant relationship with awareness at one percent level of significance. The variables age, education, farm size, farming experience, cropping pattern, innovativeness, information seeking behavior and training undergone had positive and significant relationship with awareness at five per cent level of significance. The remaining variables, cropping intensity and level of aspiration had positive and non-significant relationship with level of awareness about agri waste management practices. , Government should provide subsidy on the purchase of machinery, special programmes need be to taken to improve awareness about agri waste management and encourage custom hiring centers to reach high cost technologies to the farners. Scientists should develop machinery which are suitable to different agri wastes and climatic conditions and low cost technologies which are afforadable by the small and marginal farmers. Agri waste based communities need to be developed at ground level for the adoption and dissemination of agri waste management practices.

Consent

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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