Awareness about Plant Protection Measures by the Paddy and Cotton Growers in Karimnagar District of Telangana State

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ABSTRACT

The study was conducted in Karimnagar district of Telangana State during 2018-19 to Study awareness of Plant Protection Measures by The Paddy and Cotton growers. Sixty each paddy and cotton growers were selected by using simple random technique. Thus, making a total sample size of 120. The data was collected through personal interview method and analysed by using appropriate statistical tools. From study it was revealed that majority of the cotton growers belonged to low adoption category (43.33%) followed by medium (30.00%) and high adoption (26.66%) categories respectively with respect to plant protection measures and majority of the paddy growers (53.33%) not aware of Plant Protection Measures, followed by 46.64 per cent of the farmers aware of plant protection measures. Whereas in cotton majority of the farmers (65.00%) were not aware of plant protection measures. Whereas 35.00 per cent of cotton growers aware of it. In this study awareness had positive and significant relation with adoption level of paddy and cotton growers with regard to plant protection measures.

Key words: *Adoption; Awareness; Plant protection measures; Paddy; Adoption; Cotton.*

Rice (Oryza sativa L.) is regarded as a first cultivated crop of Asia and staple food of India which ranks second in production (*FAO, 2015*). Rice is one of the most important food crops of India in term of area, production and consumer preference. Among the rice growing countries,

Cotton is one of the most main fiber and cash crops in India and it plays a leading role in the industrial and agricultural sectors of the country. It affords the rudimentary raw material (cotton fiber) to cotton textile industries (*Chouhan, 2003*). Pesticides are the main form of crop protection used around the world. While they serve a vital purpose in controlling pests and safeguarding yields, their negative consequences are not to be taken lightly. Around 44 per cent of farmers are poisoned by pesticides every year. Pesticides can also cause serious health issues like cancer and neurological diseases and have long-lasting impacts on the environment, from polluting water sources to contaminating food supplies. Pesticides are the most widely used form of crop protection, with 5.7 per cent of the world's pesticides used on cotton, according to information provided by the International Cotton Advisory Committee for a Pesticides Action Network (PAN) UK study in 2018. Lack of awareness on overuse of pesticides by farmers has led to pesticide resistance, disruption to populations of beneficial insects and secondary pest outbreaks. Secondary outbreaks occur when the primary pests have been removed and other, secondary, pests become a problem, requiring the farmer to use another set of crop protection practices. The results of the observed methods could be used in building necessary changes in application of new technology. With this background, the present study was intended to emphasis on a study on awareness of plant protection measures by the paddy and cotton growers in Karimnagar district of Telangana state.

METHODOLOGY

Selection of the state the state of Telangana was selected purposively for the following reasons;

i.   The investigator hails from the same state. Hence, the study in the investigator's area can help the researcher to elicit the data easily.

ii. Since the researcher was well-known with local language, which would help to make quick rapport and also enable in-depth study pooled with personal observation.

iii. Further limited studies have been conducted on cotton and paddy plant protection measures in social sciences in the state of Telangana, Hence the state was selected for the study.

Karimnagar district was selected among 10 districts in Telangana state is having highest area and production under cotton and paddy crops compared to other districts in Telangana state. Manthani, Pedhapally, and Kamanpoor mandals were purposively selected since these mandals are having more number cotton and paddy growers and occupy more area under paddy and cotton cultivation as compared to the other mandals in the district and also based on the criteria of high diseases and pest infestation level. Three mandals were selected namely Manthani, Ramagundam, and Pedhapally purposively from the district based on highest acreage in cotton and paddy production. Two villages were selected randomly from each mandal. Thus, constitute 6 villages (2×3) for the study. Gopalpoor, Kammampalli, from Manthani; Elukalapally, Jayyaram, from Ramagundam Dharamaram, Kamanpoor, from Pedhapally were selected. Twenty farmers were selected randomly from each village using random number tables. Thus, constitute (20×6) 120 respondents for the study. All the cotton and paddy growers who had adopted one or more plant protection measures constituted the sample for the study.

Based on the objectives of study, awareness on Plant protection measures in cotton. A list of awareness statements was prepared by discussing with the experts from Entomology, agricultural extension and by referring to the package of practices published by agricultural university at Hyderabad. An interview schedule was prepared. The collected data was then analysed using appropriate statistical tools like frequency and per centage, arithmetic mean (X), standard deviation and co- efficient of correlation.

Awareness refers to the general consciousness of the respondents regarding plant protection measures. A schedule was developed for measuring the awareness of plant protection usage of chemicals in paddy & cotton crops.

Category	Score
Aware	Mean - 0.5×S.D
Not aware	Mean+0.5×S.D

The schedule consists of 28 statements. A score of 0 and 1 was given against each statement for its not aware and awareness respectively. The maximum and minimum scores one could get on the awareness test were 28 and 0 respectively. All the score obtained for each respondent was summued up and the respondents were categorised based on their mean and S.D. as stated below.

Adoption is the decision to make full use of an innovation. The Based on obtained scores the respondents were grouped into low, medium and high adoption categories using mean and standard deviation.

Scoring procedure developed by *Praveen Babu (2014)* was used in this study.

Category	Score
Low adoption	Mean - 0.5×S.D and below
medium adoption	Mean ±0.5×S.D
High adoption	Mean +0.5×S.D and above

The data was analysed the statistical tools such as mean, SD and correlation etc.

RESULTS AND DISCUSSION

Awareness on plant protection measures among paddy and cotton growers : From Table 1 it is clear that majority of the paddy growers (53.33%) not aware of plant protection measures, followed by 46.64 per cent of the farmers aware of plant protection measures. Whereas in cotton majority of the farmers (65.00%) from this research study were not aware of plant protection measures. Whereas 35.00 per cent of cotton growers aware of it. These findings are similar with the results of *Ahammad (2003), Ganesan (1982), Satapathy and Patnaik (1986).*

Table 1. Awareness of plant protection measures by paddy and cotton growers (N=120)

Crop	Awareness level				
	Category	No.	%	Mean	SD
Paddy	Aware	28	46.66	11.56	2.04
n_1=60	Not aware	32	53.33		
Cotton	Aware	21	35.00	11.53	2.36
n_2=60	Not aware	39	65.00		

From Table 2, in paddy farmers were not aware of practices like aware of pest's economic threshold levels (100.00%), pesticide formulations to be sprayed (70.00%), formation of alleyways to control BPH (100.00%), not aware of spurious chemicals(local chemicals) (93.33%), 86.66 per cent of farmers do not read the instructions printed on the pesticide bottle, 80.00 per cent of farmers not aware of pesticide manufacturing and expire date, 78. 33 per cent of farmers not aware of pesticide/insecticide application timings, 75.00 Not aware of sowing of crop within the time period can avoid pest or disease attack, 70.00 per cent not aware of pesticide formulations to be sprayed, 78.33 per cent not aware of banned pesticides, 71.66 per cent not aware about biocontrol measures of pests and diseases in paddy 96.66 per cent of farmers aware of washing hands and cloths after spraying of insecticides, 80.00 per cent of farmers aware of inhaling of pesticides cause ill effects, 71.00 per cent of farmers aware of application of pesticides frequently result in pesticide residues in soil, 71.00 per cent of farmers aware of plant protection measures in paddy and 70.00 per cent of farmers aware of storage of pesticides/ insecticides safely. These findings is similar with the result of *Venkataraman (1987)*.

From Table 3 in cotton 85.00 per cent farmers were aware of pheromone traps, 78.33 per cent farmers aware of smoking during pesticide application leads to ill effects and aware of bollworm measures in Bt cotton. 86.66 per cent of farmers not aware of use of chemical fertilizers that affect the quality of ground water, not aware of sowing of crop within the

Table 2. General usage of plant protection measures in paddy crop				
Components	Aware		Not aware	
	No.	%	No.	%
Are you aware of plant protection measures in paddy	43	71.00	17	28.33
Application of pesticide frequently result in pesticide residues in soil	43	71.00	17	28.33
Do you aware of sowing of crop within the time period can avoid pest or disease attack	15	25.00	45	75.00
Are you aware of pests economic threshold levels	0	00	60	100.00
Are you aware of pesticide formulations to be sprayed vis-à-vis pest/diseases	18	30.00	42	70.00
Do you aware of plant protection measures in paddy nursery	40	66.66	20	33.33
Are you aware of resistant varieties to pests and diseases in paddy	15	25.00	45	75.00
Are you aware of formation of alleyways to control BPH	0	0	60	100.00
Do you know use of chemical fertilizers may destroy the physical property of soils	34	56.66	26.	43.33
Do you know pesticides kill not only harmful insects but also beneficial insects too	22	36.67	38	63.33
Do you know use of chemical fertilizers that affect the quality of ground water	22	36.67	38	63.33
Do you aware of banned pesticides	13	21.67	47	78.33
Do you aware about biocontrol measures of pests and diseases in paddy	43	71.66	17	28.34
Do you know about seed treatment practices in paddy	43	71.66	17	28.34
Do you ware mask during spraying pesticides/insecticides	11	18.34	49	81.66
Do you ware glouses to your hands while spraying pesticides/insecticides	15	25.00	45	75.00
Are you spray insectides/pesticides towards wind direction	16	26.66	44	73.33
Are you aware of pesticides/insectides application timings	13	21.66	47	78.33
Are you aware storage of pesticides/insecticides safely	42	70.00	18	30.00
Do you aware of pesticides mixing or formulations	41	68.33	19	31.66
Do you aware of pesticides handling	36	60.00	24	40.00
Do you know inhaling of pesticide cause ill effects	48	80.00	12	20.00
Do you wash your hands and cloths after spraying insecticides	58	96.66	2	3.33
Do you know smoking during pesticide application leads to ill effects	43	71.66	17	28.33
Are you aware of pesticide manufacturing and expire date	12	20.00	48	80.00
Do you aware of spurious chemicals(local chemicals)	4	6.66	56	93.33
Do you use recommended pesticides	34	56.66	26	43.33
Do you read the instructions printed on the pesticide bottle	8	13.33	52	86.66

Table 3. General usage of plant protection measures in cotton crop (n₂=60)

Components	Aware		Not aware	
	No.	%	No.	%
Are you aware of plant protection measures cotton	35	58.34	25	41.66
Application of pesticide frequently result in pesticide residues in soil	21	35.00	39	65.00
Do you aware of sowing of crop within the time period can avoid pest or disease attack	12	20.00	48	80.00
Are you aware of pests economic threshold levels	0	00.00	60	100.00
Are you aware of pesticide formulations to be sprayed vis-à-vis pest/diseases	18	30.00	42	70.00
Do you aware of pheromone traps	51	85.00	9	15.00
Are you aware of resistant varieties to pests and diseases in cotton	27	45.00	33	55.00
Do you aware of bollworm measures in Bt cotton	47	78.33	13	21.66
Do you know use of chemical fertilizers may destroy the physical property of soils	24	40.00	36	60.00
Do you know pesticides kill not only harmful insects but also beneficial insects too	3	5.00	57	95.00
Do you know use of chemical fertilizers that affect the quality of ground water	8	13.33	52	86.66
Do you aware of banned pesticides	8	13.33	52	86.66
Do you aware about biocontrol measures of pests and diseases cotton	0	00.00	60	100
Do you know about seed treatment practices in cotton	34	56.66	26	43.33
Do you ware mask during spraying pesticides/insecticides	11	18.33	49	81.66
Do you ware glouses to your hands while spraying pesticides/insecticides	0	00.00	60	100
Are you spray insectides/pesticides towards wind direction	40	66.66	20	33.33
Are you aware of pesticides/insectides application timings	31	51.66	29	48.33
Are you aware storage of pestices/insectides safely	46	76.66	14	23.33
Do you aware of pesticides mixing or formulations	19	31.66	41	68.33
Do you aware of pesticides handling	43	71.66	17	28.33
Do you know inhaling of pesticide cause ill effects	35	58.33	25	41.66
Do you wash your hands and cloths after spraying insecticides	58	96.66	2	3.33
Do you know smoking during pesticide application leads to ill effects	47	78.33	13	21.66
Are you aware of pesticide manufacturing and expire date	16	26.66	44	73.33
Do you aware of spurious chemicals(local chemicals)	15	25.00	45	75.00
Do you use recommended pesticides	31	51.66	29	48.33
Do you read the instructions printed on the pesticide bottle	12	20.00	48	80.00

time period to avoid pest (80.00%), pest economic threshold levels (100.00%), pesticide formulations to be sprayed (70.00%), Biocontrol measures of pests and diseases (100.00%), 95.00 per cent farmers not aware of pesticides kill not only harmful insects but also beneficial insects too pesticides mixing or formulations (68.33%), instructions printed on the pesticide bottle (80.00%), and awareness of spurious chemicals (local chemicals) (75.00%), 55.00 per cent farmers not aware of resistant varieties to pests and diseases in cotton. The reason for this results might be due to medium exposure to social and mass media, having less extension contacts, low education, low innovativeness. Similar findings reported by *Augustine (2015)* and *Indiradevi (2010)*.

Table 4 indicated that 43.33 per cent of cotton growers belonged to low adopter category followed

Table 4. Distribution of respondents according to the adoption level (n= 60)

Crop	Growers' adoption level			Mean	SD
	Category	No.	%		
Cotton n₁=60	Low (<6.28)	26	43.33	7.00	
	Medium (6.28 to7.72)	18	30.00		1.4
	High (>7.72)	16	26.66		

Table 5. Relationship between awareness of paddy and cotton growers and their knowledge level of plant protection measures.

Socio- Psychological characters	'r' value	
	Paddy	Cotton
Awareness	0.319*	0.362**

*Significance at 5%, **Significance at 1% level of probability, NS – Non-significant

Table 6. Relationship between awareness of paddy and cotton growers and their adoption level of plant protection measures.

Socio- Psychological characters	'r' value	
	Paddy	cotton
Awareness	0.301*	0.220*

by 30.00 and 26.66 per centage of them had medium and high adoption respectively about plant protection measures in cotton crop. Further these findings are in line with *Javeed et al. (2014), Praveen Babu (2014)* and *Manjunath (2010).*

Awareness vs. knowledge : It is observed that there is a positive and significant relationship between awareness and knowledge level of paddy and cotton growers on plant protection measures. The reason behind these results might be due to the increased awareness. The farmers go a search of knowledge (Table 5).

Awareness vs adoption : In this study awareness had positive and significant relation with adoption level of paddy and cotton growers with regard to plant protection measures. The reason for this finding might be awareness have always positive relationship with adoption. Awareness is come to know the existence of new practices but lacks information and knowledge about new practice so farmers before going to adopt the new practices they should be aware of it and other reasons are more extension contact, social and mass media helps to know the existence of new technologies in paddy and cotton crops (Table 6).

CONCLUSION

Plant protection measures are very important in modern agriculture as most of the crop loss is due to pest and diseases. So in order to protect the crop from pest and disease attack to get more yield, farmers are over using plant protection chemicals without having awareness and knowledge on recommended plant protection measures. Hence it is overbearing that State Department of Agriculture, state agricultural universities and other NGOs should sort out combined and intensive extension efforts to create awareness and provide prerequisite knowledge about plant protection measures to paddy and cotton growers.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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