



KNOWLEDGE LEVEL OF SUGARCANE GROWERS ON PRECISION FARMING PRACTICES

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Abstract

The present investigation was conducted to find out the knowledge level of Sugarcane growers on precision farming practices in four communes of Puducherry Union Territory. The study revealed that nearly half the proportion of the respondents (49.00 per cent) had high level of knowledge and 35.00 per cent of the respondents had medium level of knowledge on precision farming practices. Regarding practices wise knowledge, all the respondents possessed adequate knowledge on most of the production technologies. Further the findings on correlation analysis showed that the profile characteristics namely educational status, area under precision farming, experience in precision farming, extension agency contact, scientific orientation risk orientation and innovativeness had a positive and significant relationship with knowledge level of precision farming sugarcane growers.

Keywords: Sugarcane, Precision farming, Knowledge, Production Technologies, Relationship.

Introduction

The green revolution has not only increased productivity, but it has also several negative ecological consequences such as depletion of lands, decline in soil fertility, soil salinization, soil erosion, deterioration of environment, health hazards, poor sustainability of agricultural lands and degradation of biodiversity. Indiscriminate use of pesticides, irrigation and imbalanced fertilization has threatened sustainability. Precision farming is the application of technologies and principles to manage spatial and temporal variability associated with all aspects of agricultural production for the purpose of improving crop performance and environmental quality. The advantages of precision farming is that, it offers opportunities to improve agricultural productivity and product quality, reduces agro-chemical wastage through efficient application and resulting in minimizing environmental pollution and energy conservation. Precision Farming in Sugarcane Agriculture is unavoidable as India is second largest producer of sugar and sugarcane. Sugarcane is cultivated in about 4.09 million hectares, producing about 283 million tonnes of cane with an average productivity 69.19 MT/ha.

Of the several agriculture crops, sugarcane is the most remunerative, its requirement for water and fertilizer is also equally very high. Application of precision farming technologies is presently at the nascent stage in India. Some discrete initiatives have been started towards the application of this technology. Precision farming has been identified as one of the main thrust areas by the Working Groups (WGs) of India-US Knowledge Initiative on Agriculture (Annon, 2007). The 'fertigation' method - an integrated programme of supplying fertilisers with irrigation waters - was the most important component of the precision farming in sugarcane. To enhance the production and productivity of sugarcane cultivation in Puducherry Union Territory it becomes imperative to bring the sugarcane production under precision farming practice. Hence, a study on <https://www.sciencedirect.com/science/article/pii/S1002007109000173> - bib30 Knowledge level of Sugarcane growers on Precision Farming Practices has become necessary. <https://www.sciencedirect.com/science/article/pii/S1002007109000173> - bib30 The study was conducted with the objective

of to find out the knowledge level of sugarcane growers on precision farming technologies.

Materials and Methods

The study was conducted in four communes of Puducherry Union Territory namely Bahour, Mannadipet, Nettapakkam and Villianur. A sample size of 100 respondents who cultivated sugarcane under precision farming were selected randomly. The data were collected using a well structured interview schedule. The collected data were analyzed statistically using cumulative frequency, percentage analysis and correlation analysis.

Results and Discussion

Knowledge level of sugarcane growers on Precision farming practices:

The results on knowledge level of the sugarcane growers on precision farming practices were presented in Table-1.

Table 1 : Distribution of respondents based on sugarcane precision farming practices

(n=100)			
S.No.	Category	Number	Percent
1	Low	16	16.00
2	Medium	35	35.00
3	High	49	49.00
Total		100	100

The table 1 revealed that nearly fifty percent of the respondents (49.00 percent) had high level of knowledge followed by medium (35.00 percent) and low (16.00 percent) levels. It could be concluded that majority of the respondents (84.00 percent) had medium to high level of knowledge on precision farming practices in sugarcane cultivation. The reason for this may be that the technology was new to the farmers and acquiring quality knowledge may takes some times to be achieved. This was better than the outcome of investigation of Reichardt *et al.* (2006) in Germany which reported that young farmers have zero knowledge about precision farming technologies.

Practice-wise knowledge level of sugarcane growers:

The results on distribution of the respondents based on their practice wise knowledge level are presented in Table-2.

Table 2 Practice-wise knowledge level of sugarcane growers on precision farming practices

Table 2 : Distribution of respondents according to their Practice wise Knowledge level

S. No	Practices	No of Respondents	Per cent
1.	Recommended variety	91	91.00
2.	Sett rate	72	72.00
3.	Chemical for Sett treatment	54	54.00
4.	Fertilizer for basal application	89	89.00
5.	Spacing	87	87.00
6.	Irrigation	73	73.00
7.	Intercropping	85	85.00
8.	Growth regulator	42	42.00
9.	Time of De-trashing	96	96.00
10.	Time of Earthing up	75	75.00
11.	Quantity of Farm Yard Manure	67	67.00
12.	Quantity of NPK application	83	83.00
13.	Drip irrigation	88	88.00
14.	Number of weeding	89	89.00
15.	Recommended herbicide	73	73.00
16.	Time of Propping	92	92.00
17.	Control measures for borer	82	82.00
18.	Control measures for Rot	84	84.00
19.	Time for harvesting	95	95.00
20.	Recommended Brix Content	43	43.00

From Table-2 it could be connected that an overwhelming majority of the respondents possessed knowledge about correct time for de-trashing (96.00 Per cent) and harvesting (95.00 per cent), Propping (92.00 per cent) and Variety (91.00 per cent). The reason for this might be the fact that this was the major focus of the farmers was to carry out these operations in time to achieve a potential yield.

More than 80.00 per cent of the respondents possessed knowledge on recommended dose of fertilizer for basal application (89.00 per cent), Number of weeding (89.00 per cent), drip irrigation (88.00 per cent), Spacing (87.00 per cent), Intercropping (85.00 per cent), Red rot management (84.00 per cent), Quantity of NPK (83.00 per cent), Control measures for borer (82.00 per cent). The reason for high level of knowledge in general understanding of precision farming technologies might be as a result of up to date training conducted for the farmers about the technologies by the State Agricultural Department and Cane officers of the Sugar Mills.

The respondents possessed knowledge on recommended herbicide was 73.00 per cent followed by Sett rate (72.00 per cent), Quantity of FYM (67.00 per cent), Chemical for Sett treatment (54.00 per cent), Brix content (43.00 per cent) and Growth regulator (42.00 per cent). In general, it could be inferred that the respondents possessed adequate knowledge on most of the Production technologies under Precision Farming.

Relationship of Characteristics of the Sugarcane growers with their Knowledge level on Precision farming practices

Correlation analyses were worked out to find out the relationship of characteristics of sugarcane growers with their Knowledge level and the results are presented in Table-3.

Table 3 : Relationship of characteristics of respondents with their Knowledge level on Sugarcane Precision farming technologies. (n=100)

S.No.	Variable	'r' Value
1.	Age	0.146 NS
2.	Educational Status	0.196*
3.	Occupation	-0.295 NS
4.	Annual Income	0.025 NS
5.	Area under Precision farming	0.299**
6.	Experience in Precision farming	0.255*
7.	Farm power possession	0.146 NS
8.	Social Participation	0.048 NS
9.	Extension agency contact	0.276**
10.	Scientific Orientation	0.394**
11.	Economic motivation	0.155 NS
12.	Risk orientation	0.205*
13.	Innovativeness	0.234*
14.	Irrigation Intensity	0.117 NS
15.	Credit orientation	0.169 NS

$R^2 = 0.6065^{**}$ - Significant at 1% level * - Significant at 5% level NS-Non-Significant

From the Table-3, it could be found that the variables namely area under precision farming, extension agency contact and scientific orientation had positively associated with the Knowledge level of the precision farming sugarcane growers at 1% level of probability. The variables namely educational status, experience in precision farming, risk orientation and Innovativeness had positive and significant relationship with knowledge level of the respondents at 5% level of probability. All other variables were found to be non-significant.

Conclusion

From the study it could be concluded that majority of the respondents had high level of knowledge on sugarcane precision farming practices. The knowledge level of the respondents were positively influenced by the characteristics namely educational status, area under precision farming, experience in precision farming, extension agency contact, scientific orientation, risk orientation and Innovativeness.

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