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Knowledge of Precision Farming Beneficiaries

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ABSTRACT

Precision Farming is one of the many advanced farming practices that make production more efficient by better resource management and reducing wastage. TN-IAMWARM is a world bank funded project aims to improve the farm productivity and income through better water management. The present study was carried out in Kambainallur sub basin of Dharmapuri district with 120 TN-IAMWARM beneficiaries as respondents. The result indicated that more than three fourth (76.67 %) of the respondents had high level of knowledge on precision farming technologies which was made possible by the implementation of TN-IAMWARM project. The study further revealed that educational status, occupational status and exposure to agricultural messages had a positive and significant contribution to the knowledge level of the respondents at 0.01 level of probability whereas experience in precision farming and social participation had a positive and significant contribution at 0.05 level of probability.

Indian Agriculture is characterized by small and marginal operational holdings. Due to the small size of holdings and heterogeneity of cropping systems application of crude technologies of Precision Farming is not easy in India (Shanwad *et al.,* 2004). Tamil Nadu is one of the water deficit States in India, with only 925 millimeters of average rainfall in a year. Agriculture is the largest consumer of water in the State, using 75 per cent of the State's water. Considering the huge demand of water for irrigation purpose, a state sponsored project, Tamil Nadu Precision Farming Project (TNPFP) was implemented during 2004-05 to 2006-07 in Dharmapuri and Krishnagiri districts, aiming at improvement of agricultural sector with effective use of limited resources including water (TNAU agritech portal).

Considering the huge impact of Tamil Nadu Precision Farming Project, Tamil Nadu Irrigated Agriculture Modernization and Water Bodies Restoration and Management (TN IAMWARM), a World Bank funded project was implemented with the prime motive of maximizing the productivity of water leading to improved farm incomes and products. Precision Farming is one of the important components of the project. Under this project, 63 selected sub basins were covered from the year 2007 to 2015 covering an ayacut area of 6.17 lakh hectares with Water Resources Organization as the nodal agency. In Dharmapuri district this project was implemented in the year 2010 and the farmers were taught about water saving and improved production technologies of major crops. Therefore a study was undertaken with an

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objective to assess the impact of recommended Precision Farming technologies on the knowledge of the TN-IAMWARM beneficiaries.

METHODOLOGY

Expost facto research design was adopted with the beneficiaries of Precision Farming under TN-IAMWARM project in Kambainallur sub-basin of Dharmapuri district as respondents of the study. From all the five blocks of the Kambainallur sub-basin where the project was implemented 120 respondents were selected by employing proportionate random sampling method. The data were collected with the use of a well structured interview schedule. The collected data were analyzed using the statistical tools viz., percentage analysis, mean and Standard Deviation and multiple regression analysis.

FINDINGS AND DISCUSSION

Over all knowledge level of precision farming beneficiaries

It could be inferred from Table 1 that more than three fourth (76.67%) of the respondents had high level of knowledge on Precision Farming technologies followed by 17.50 per cent with medium level of knowledge leaving the remaining 5.83 per cent at low level. This might be due to the frequent field visits made by the scientists and field staff of TN-IAMWARM project and the trainings and exhibitions conducted under the project. Hence, the respondents got enough opportunities to gather more information about the technologies they are adopting as well to clarify their doubts regarding Precision Farming. The results are in line with Satiyachitradevi (2006).

Table 1.
Distribution of Respondents According to Their Overall Knowledge level
(n = 120)

Sl. No.	Category	Number	Per cent
1.	Low	7	5.83
2.	Medium	92	76.67
3.	High	21	17.50
	Total	**120**	**100.00**

Technology wise knowledge of precision farming beneficiaries

The knowledge of the respondents was measured in terms of a number technologies followed in precision farming. It could be observed from Table 2 that all the respondents had knowledge about the type of irrigation used in Precision Farming. About 95.83 per cent and 88.33 per cent of the respondents had knowledge about the portrays used for preparing the nursery and the use of plastic mulching done in fields under Precision Farming. The water soluble fertilizers used in Precision Farming was known to 78.33 per cent of the respondents and 68.67 per cent

Table 2.
Distribution of Respondents According to Their Technology wise Level of Knowledge
(n = 120)

Sl. No.	Recommended technologies	*Number	Percent
1.	*Trichoderma viride* is used for seed treatment	82	68.67
2.	Plastic mulching is done in the field to conserve moisture as well as to suppress weeds	106	88.33
3.	Portrays are used for nursery preparation in Precision Farming	115	95.83
4.	Six mulching rolls are required per acre	82	68.33
5.	The type of irrigation used in Precision Farming is drip irrigation	120	100.00
6.	Water soluble fertilizers are recommended under Precision Farming	94	78.33
7.	Planofix is used in vegetables to control flower shedding	66	55.00
8.	Acid used to clear clogging in drippers is hydrochloric acid	26	21.67

*Multiple responses obtained

each had knowledge on the use of *Trichoderma viride* which is used for seed treatment and number of mulching rolls required per acre. Planofix which is used to control flower shedding was known to about 55.00 per cent of the respondents and only 21.67 per cent were knowledgeable about the name of the acid used to clear clogging in drippers. Majority of the basic technologies in Precision Farming were known to most of the respondents. Field visits by project staff, trainings, exhibitions, etc., might have helped them to gain more knowledge.

Contribution of the profile characteristics of respondents to their level of knowledge

It could be seen from Table 3 that the variables viz., educational status (X_2), occupational status (X_3) and exposure to agricultural messages (X_9) had a positive and significant contribution with the level of knowledge of the respondents at 0.01 level of probability whereas experience in precision farming (X_7) and social participation (X_{11}) had positive and significant contribution at 0.05 level of probability.

It could be interpreted from the results that the level of knowledge would increase with increase in the educational status, occupational status, exposure to agricultural message, experience in precision farming and social participation. Respondents with agriculture alone as their occupation would have more time to involve in activities that enhance their knowledge. Exposure to agricultural messages, social participation and experience in precision farming would naturally contribute to the level of knowledge of the respondents as the respondents are getting more opportunities to get exposed to information on precision farming. As

Table 3.
Multiple Regression Analysis of Profile Characteristics of Respondents with Their Level of Knowledge

Variable No.	Variables	Regression co-efficient	Standard error	't' value
X_1.	Age	0.002	0.226	0.008^{NS}
X_2.	Educational status	0.505	0.072	7.039**
X_3.	Occupational status	0.152	0.141	1.075**
X_4.	Annual income	-0.034	0.000	-0.226^{NS}
X_5.	Farm size	-0.037	0.185	-0.202^{NS}
$X_{6.}$	Farming experience	0.010	0.009	1.063^{NS}
X_7.	Experience in Precision Farming	0.835	0.331	2.521*
X_8.	Shift in cropping pattern	0.170	0.141	1.209^{NS}
X_9.	Exposure to agricultural messages	0.094	0.031	3.022**
X_{10}.	Contact with extension and other agencies	0.002	0.054	0.029^{NS}
$X_{11.}$	Social participation	0.128	0.064	1.979*
$X_{12.}$	Attitude towards Precision Farming	0.006	0.065	0.090^{NS}
$X_{13.}$	Scientific orientation	-0.064	0.063	-1.014^{NS}
$X_{14.}$	Economic motivation	0.029	0.047	0.631^{NS}

R^2= 0.514; F=7.937 ** Significant at 0.01 level of probability * Significant at 0.05 level of probability NS = Non-Significant

precision farming is comparatively new, most of the agricultural programmes in television and radio focus on this in order to create awareness as well as to spread precision farming technologies among the people. Various agricultural agencies such as Tamil Nadu Agricultural University (TNAU) and State Department of Agriculture also take initiatives to enhance the knowledge of the farmers on Precision Farming. Emanuele *et al.* (2013) also reported that the knowledge on Precision Farming mainly depended on previous experience of the farmers in similar area.

CONCLUSION

The present study revealed that nearly two third of the beneficiaries of TN-IAMWARM project possessed high level of knowledge on precision farming. The high level of knowledge can be attributed to the frequent field visits, trainings exhibitions etc. which were conducted under the project. Since precision farming was felt as more innovative way of farming which would give higher income, almost all the beneficiaries had interest to gain more knowledge about precision farming

technologies. Majority of the respondents were knowledgeable about the basic technologies followed under precision farming such as mulching, drip irrigation etc. Since majority of the respondents were old aged it was difficult for many of them to memorize some of the technical terms used in precision farming. The practical exposure which the beneficiaries got from the TN-IAMWARM project helped them to improve their knowledge.

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