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Adoption Level of Farmers on Maize Cultivation Practices

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ABSTRACT

The study to measure the extent of adoption level of maize production technologies have been conducted among the maize farmers in the Udumalpet block. The results of the study would help to know the adoption level of farmers which would had in designing suitable programmes to cater to the needs of the farmers. The results revealed that majority (64 per cent) of respondents belonged to the category of medium adoption level whereas, 23.30 per cent of the respondents belonged to the category of low adoption level and above one tenth (14 per cent) of respondents belonged to high adoption level category.

Maize is cultivated widely in Udumalpet block, with the result that the produce is of varying quality with varying productivity. With a large area under cultivation and low productivity, maize has a strong potential for production growth in coming years. Due to different cropping patterns, quality and growing seasons, the trade dynamics of maize are unique to the production centers and seasons.

The current level of maize yield in the country (2.1 MT/Ha) is far behind the global average of 4.92 MT/Ha, and there is a huge scope for improvement in yield by improving the adoption of hybrids, particularly in traditional maize growing regions. With the growing demand from feed and starch sector, the overall demand for maize is likely to grow at a brisk pace. Considering the importance of maize in the local market for food and industrial uses, it could be suggested that an increase in the supply of this commodity would suffice the demand. To attain this level of production, it is imperative to step up productivity from the existing national average and also an increase in the area under the crop. Hence, this study has been designed to study the adoption level of the maize farmers.

METHODOLOGY

Tiruppur district has 13 blocks. Out of thirteen blocks, Udumalpet block in Tamil Nadu was purposively selected for this study because it has more area under maize cultivation. Maize growing farmers were the respondents for the present study. A list of farmers growing maize crop was obtained from the Assistant Director of Agriculture for all the selected villages. From the list, a total of 150 maize growers were selected for the study by using proportionate random sampling technique.

FINDINGS AND DISCUSSION

Adoption level of maize farming technologies

According to Rogers (1983), 'Adoption is the

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decision to make full use of an innovation at the best course of action available'. Future research on innovations solely depends on the decision of adoption or rejection of the existing technology and also paves way for implementation of various special schemes. Hence, it was felt necessary to assess the adoption level of farmers on maize cultivation. The pertinent data with regard to overall adoption and technology-wise adoption were collected and is furnished in Table 1 and Table 2.

With respect to adoption level of the respondents, it was observed from the Table 1 that 64.00 per cent of the farmers belonged to medium adoption level while 23.30 per cent of them had low level of adoption followed by above one tenth (12.70 %) in high adoption level.

Table 1.
Distribution of Respondents According to Their Overall Adoption Level of Maize Cultivation Technologies

(n=150)

Sl.No.	Category	Number	Per cent
1	Low	35	23.30
2	Medium	96	64.00
3	High	19	12.70
	Total	**150**	**100**

The adoption level might be due to varied reasons viz., lack of social participation in social organisations, low level of scientific orientation, low level of awareness on critical technologies that particularly influences greater yield. Lack of adequate finance, the availability of labour and hesitation to invest more because the return is not assured due to natural calamities and price fluctuation could also be the reasons expressed for medium adoption by the respondents.

Adoption level of individual practices

When the individual practices are judged for their adoption level the exact problems, mistakes and their solutions can be sought out. The adoption level of individual practices in maize cultivation are analysed and presents in the Table 2.

An examination of Table 2 projects the practice-wise extent of adoption of maize cultivation practices. The data show that the land preparation methods like ploughing the main field, correct size of ridges and furrows and size of beds were partially adopted by the majority of the respondents (i.e., 90.70 %, 92.00 % and 92.70 %) respectively.

The results clearly indicate that maize growers are conscious about the importance of better land preparation techniques. The main reasons behind good land preparation were that it helps to control weeds, to soften

Table 2.
Distribution of Respondents According to Their Adoption Level of Individual Practices
(n=150)

SI.No.	Recommended Technologies	FA		PA		NA	
		No.	%	No.	%	No.	%
I	**Land preparation**						
1	Ploughing the main field	14	9.33	136	90.70	0	0
2	Size of Ridges and Furrows	12	8.00	138	92.00	0	0
3	Size of beds	11	7.33	139	92.70	0	0
II	**Nutrient management**						
4	FYM (t/ha)	13	8.67	98	65.30	39	26.00
5	Azospirillum (Packets/ha)	11	7.33	18	12.00	121	80.70
6	Micronutrient mixture	6	4.00	15	10.00	129	86.00
7	NPK (kg/ha)	12	8.00	138	92.00	0	0
8	Basal dose of Nitrogen	43	28.70	107	71.30	0	0
9	Time and quantity of secondand third top dressing of N	54	36.00	96	64.00	0	0
III	**Sowing practices**						
10	Seed rate/ha	112	74.70	38	25.30	0	0
11	Seed treatment	8	5.33	28	18.70	114	76.00
12	Spacing for maize crop	47	31.30	67	44.70	36	24.00
13	Depth of Sowing	112	74.70	38	25.30	0	0
IV	**Weed management**						
14	Atrazine (kg/ha)	8	5.33	56	37.30	86	57.30
15	Hoeing, hand weeding and earthing up	134	89.30	16	10.70	0	0
V	**Water management**						
16	Total number of irrigation	35	23.30	115	76.70	0	0
17	Most critical phase	28	18.70	122	81.30	0	0
VI	**Pest management**						
18	Shoot fly	12	8.00	118	78.70	20	13.30
19	Release of Egg parasitoid-*Trichogramma Chilonis*	8	5.33	16	10.70	126	84.00
20	Stem borer	24	16.00	97	64.70	29	19.30
21	Cob borer	11	7.33	42	28.00	97	64.70
22	Thrips	8	5.33	0	0	142	94.70
VII	**Disease management**						
23	Downy mildew	10	6.67	140	93.30	0	0
24	Leaf blight	15	10.00	135	90.00	0	0
VIII	**Harvesting**						
25	Harvesting stage	132	88.00	18	12.00	0	0
26	Burning the mouldy cobs	18	12.00	23	15.30	109	72.70
IX	**Post harvest**						
27	Drying the maize cobs on polythene sheet	22	14.70	12	8.00	116	77.30
28	Sorting the maize cobs	65	43.30	32	21.30	53	35.30
X	**Storage**						
29	Moisture content	12	8.00	8	5.33	130	86.70
30	Using Celphos	8	5.33	8	5.33	134	89.30

Note: No. - Number. % - Per cent. FA- Full Adoption, PA- Partial Adoption, NA- Non-Adoption.

the surface soil and prepare a good seedbed to allow easier seeding of crops, to expose the soil organic matter to oxygen and help release soil nutrients for crop growth, to reduce compaction of the soil and to improve the infiltration of water.

Under Nutrient Management techniques, 65.30 per cent of the respondents have partially adopted the recommended dosage of FYM. The possible reason for FYM application was that it would improve the produce quality to large extent and also reduce the expenditure on chemical fertilizer. It would also increase the fertility of soil and its productivity. But it was more partially applied due to its less availability and high cost involved in transport and labour.

Application of Azospirillum, Micronutrient mixture, NPK, Basal dose of Nitrogen and Time and quantity of second and third top dressing of Nitrogen was partially adopted by 12.00 %, 10.00 %, 92.00 %, 71.30 % and 64.00 % of the respondents. In case of bio-fertilizer, majority of the maize farmers have not adopted the application of bio-fertilizer. The reason for non-adoption of recommended dosage of bio-fertilizer was the farmers predisposition that it plays no role in increasing the yield and the application of bio fertilizer is labour intensive since it has to be applied separately.

Further, the common tendency prevailing among the maize farmer was that more fertilizer would increase the yield and also most of the cultivators did not have the correct knowledge about the recommended fertilizer dosage.

The sowing practices like correct seed rate and depth of sowing was fully adopted by majority (74.70 %) of respondents. About 76.00 per cent and 24.00 per cent has completely not adopted the sowing practices such as seed treatment and spacing during sowing. Sowing practices were correctly adopted by majority of maize farmers as it is essential for vigorous and healthy seedlings. This leads to a good crop stand. Also, spacing is an important practice which decides the number of plants per acre in turn the yield level, hence majority of maize farmers have adopted the recommended spacing. But seed treatment practice was not followed by majority (76.00 %) of the farmers as the results of treating the seeds are not much visible. Correct spacing was not followed by less than a quarter (24.00 %) of the farmers as maize is used for both grain and fodder purpose by them. Spacing influences the purpose for which the maize cobs and maize plants are used and hence the adoption level.

In the case of weed management practices, 37.30 per cent of respondents have partially adopted the application of weedicide (Atrazine). Hoeing, hand weeding and earthing up operation was fully adopted by 89.30 per cent of farmers. The possible reason might be that in maize cultivation the inter cultivation practices like hoeing, hand weeding and earthing up go hand in hand to kill the weeds in the seedbed that would crowd out the crop or compete with it for water and nutrients. Since weed management influences the ability of the crop to emerge and is an important operation for higher yield, majority of maize

farmers have adopted the recommended practice. Use of chemical Atrazine was not profoundly found among the farmers as they neglect to use it due its residual effect. Despite labour shortage famers fixed themselves to hand weeding only.

Water management practices like providing total number of irrigation and irrigating during the most critical phase of irrigation was partially adopted by 76.70 per cent and 81.30 per cent of the respondents.In Udumalpet block water should be used when it is let for irrigation in the PAP canal and other sources of irrigation like rain and power facilities for using bore wells are other hindering factors leading to partial adoption. Water is becoming a scarce resource and maize farmers have to strive to increase productivity with the available water resources.

Under pest management, about 78.70 per cent, 64.70 per cent and 28.00 per cent of farmers have partially adopted the adopted the control measures for Shoot fly, stem borer and cob borer. Release of egg parasitoid *Trichogramma Chilonis* was not adopted by majority (84.00 per cent) of the respondents. For thrips management 94.70 per cent of respondents have not adopted the practice.

The Disease management techniques in maize cultivation for downy mildew and leaf blight control most of the (93.30 % and 90.00 %) of the farmers have only partially adopted it. Majority of the maize farmers have partially adopted chemical spraying technique. The common tendency prevailing among maize farmer is that more chemical spraying would control the incidence of pest and disease very effectively and immediately which induced them to go for more and irregular number of sprays. More over most of the maize farmers did not have the correct knowledge about the chemical dosage and application. They want immediate control which is not possible in in case of releasing egg parasitoid *Trichogramma Chilonis* and therefore the resultant adoption.

In the case of harvesting, majority of the farmers (88.00 %) have followed the correct harvesting stage. Burning the mouldy cobs in maize was completely adopted by only 12.00 per cent of farmers. The reasons that could be attributed for harvesting maize at seed hard stage are to harvest the seeds with the correct nutrient content, less damage of seeds and attractive colour of the seeds which helps for easy marketing. Burning the cobs in the field was not followed by majority of the farmers as they were not aware of the benefits of the practice. Mouldy cobs deteriorate the quality of healthy cobs also. Creating awareness plays a major role here to enable a farmer to adopt the practice.

Under Post harvest management, 77.30 per cent of respondents have not adopted the technology of drying the maize cobs on polythene sheet. Sorting the maize cobs have been fully adopted by 43.30 per cent of farmers, 21.30 percent of respondents have partially adopted the technique and 35.30 per cent of farmers have not adopted cob sorting.

Maize can only be stored well if it has been properly dried. Drying on bare floor results in contamination of impurities. Hence it is

imperative to create awareness about drying techniques among the farmers and improve their adoption level. The adoption of sorting the maize cobs can be justified stating that most of the respondents were convinced as to the profitability and practicability of this practice.

In the storage techniques for correct moisture content and using of celphos around 86.70 and 89.30 per cent of the farmer have not adopted the techniques respectively.If maize kernels are to be stored for 1 month the moisture content should be <16%, for 3 months the moisture content should be <14%, and for 3 years the moisture content should be <12%. Hence proper storage operations should be adopted. Without appropriate storage protection measures, farmers are often left with no alternative but to sell their produce soon after harvest, even though it may not be possible to secure attractive prices on the market. Integrated storage pest protection enables farmers to extend the storage period without having to take the risk of increased losses. As a result, farmers with surpluses have greater choice in selecting the appropriate date of sale, which means they can wait for periods where maize prices have reached a high level.

Thus it is evident from the results that majority of the farmers did not know that maize grains should not be dried on the bare floor, inadequately dried grains should not be stored, grains should not be stored under damp condition. Proper protection measures should be followed ensuring grain moisture content at the time of harvest and at the time of purchase. So the maize farmer should be convinced of the utility and relative advantage of storage and protection measures and enhance their adoption level.

CONCLUSION

It could be understood that the simple technologies are relatively adapted to a greater extent as compared to complex technologies. The adoption of any technology in general and maize cultivation practices in particular depends upon various factors such as awareness about practices, extent of change agency's efforts, complexity of practices, timely availability of inputs, characteristics of maize farmers etc. However it is true that all recommended practices will not be adopted at same degree by all the members in a given social system at a particular time reference.

REFERENCE

Rogers. E.M. 1983. Diffusion of Innovation, New York, the Free Press, PP.453.