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ADOPTION OF RECOMMENDED KINNOW PRODUCTION TECHNOLOGY

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ABSTRACT

The study was concluded in two panchayat samities of Sri-Ganganagar district. The results indicated that majority of kinnow growers belonged to medium adoption category for the recommended kinnow production technology such as 'application of N', 'application of potash', 'planting pit size' and 'filling the pit'. The least adoption was for the practices such as 'plant protection measure' and 'application of growth regulators' and high adoption for the practices such as 'plant population', 'irrigation intervals', 'application of FYM', 'plantation depth', 'recommended method of propagation' and 'application of phosphorus'. The knowledge level, education level, size of land holding and occupation were positively and significantly associated where as their market distance was negatively and significantly associated, while social participation and irrigation potentiality were positively and non-significantly related with the adoption level of farmers about recommended kinnow production technology.

INTRODUCTION

Fruits are of great importance in human diet. India is the second largest producer of fruits in the world, its share in the world's fruit production is 10 percent. The most important commercial citrus cultivars in India are the mandarin, followed by sweet orange and acid lime with a total production of 20.84, 38 and 26.29 lakh tones (Anonymous, 2009-10) respectively. Commercially, kinnow mandarin is grown in states like Punjab, Haryana, Himachal Pradesh, North-Western part of Rajasthan and Uttar Pradesh. In north India, the cultivation of mandarin is limited due to the acidity and puffiness of the fruit. Kinnow has been proved promising in place of mandarin because kinnow has wide adaptability to variable agro-climatic conditions and also comparatively more resistant to insect pests and diseases. Incidence of fruit dropping due to hail storms or other reasons is also comparatively less. Kinnow is usually less prone to bird damage, as almost two third of the fruits are known to bear in the interior of the tree. In Rajasthan, kinnow occupies 5522 hectares area under cultivation (Anonymous, 2008-09) of which 2000 hectares area comes under Sri-Ganganagar district of Rajasthan. The total production of kinnow is 143372 metric tonnes in Rajasthan of which 40000 tonnes comes under Sri-Ganganagar district and Ganganagar division (Bikaner, Churu, Hanumangarh, Sri-Ganganagar) is well known for its area and production of kinnow.

RESEARCH METHODOLOGY

The study was conducted in Sri-Ganganagar district of Rajasthan. Sriganganagar district comprises of nine panchayat samities out of these two panchayat samities viz., Sriganganagar and Srikaranpur were selected and from two selected panchayat samities ten villages were selected purposively on the basis of highest area and production. Thus, 12 kinnow growers from each of the selected villages were selected by employing a simple random sampling technique. Total number of 120 respondents formed the sample of the study. Based on the adoption score obtained by farmers, the mean score (21.02) and standard deviation (5.26) were computed for the purpose of classifying the adoption level into three category namely low, medium and high.

RESULTS AND DISCUSSION

The respondents were categorized as low

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adopters (Scores below 15.76), medium adopters (scores from 15.76 to 26.27) and high adopters (scores above 26.27) categories based on the adoption scores obtained by the respondents. The mean score (21.02) and standard deviation (5.26) were computed for the purpose of classifying the adoption level of farmers (Table 1).

Table 1. Distribution of farmers under different adoption categories towards recommended kinnow production technology

n = 120

S. No.	Adoption categories	Number of farmers	Per cent of farmers
1.	Low adopters (scores below 15.76)	20	16.67
2.	Medium adopters (scores from 15.76 to 26.27)	78	65.00
3.	High adopters (scores above 26.27)	22	18.33
	Total	**120**	**100.00**

$\overline{X} = 21.02$, $\sigma = 5.26$

Table 1 reveals that majority of the respondents (65.00 per cent) of the farmers belonged to medium adoption category followed by high adoption (18.33 per cent) and low (16.67 per cent) adoption categories for recommended kinnow production technology.

It is evident from Table 2 that the over all extent of adoption of improved practices of kinnow plantation was 56.39 per cent. Out of 12 selected practices, the extent of adoption of 'Plant population' was 96.00 per cent which was highly adopted by the farmers and was ranked first in the adoption of recommended kinnow production technology. The adoption of 'irrigation interval' (94.38 per cent) was ranked second. The third rank was accorded to the adoption of 'application of FYM' which was adopted by kinnow growers to the extent of 92.08 per cent.

The extent of adoption of 'plantation depth' was 88.06 per cent and was ranked fourth, followed by 'recommended method of propagation' (65.83 per cent) and 'application of phosphorus' (61.88 per cent) and were placed at fifth and sixth position, respectively.

The practices like 'application of N' and 'application of potash', were moderately adopted as their extent of adoption was 57.08 per cent and 53.96 per cent and were ranked seventh and eight. The low adoption was found in the practices of 'planting pit size' (37.92 per cent) and 'filling the pit' (33.95 per cent) and were ranked ninth and tenth.

The very low adoption was found in the practice of 'plant protection measures' (13.17 per cent) and was ranked eleventh. The 'application of growth regulators' was the least adopted practices by the kinnow growers and was adopted only to extent of 6.67 per cent and was ranked last.

Table 2. Extent of adoption of recommended kinnow production technology by the farmers

n = 120

S. No.	Aspects of adoption	Extent of adoption (per cent)	Rank
1.	Recommended method of propagation	65.83	V
2.	Plantation depth	88.06	IV
3.	Plant population	96.00	I
4.	Planting pit size	37.92	IX
5.	Filling the pit	33.75	X
6.	Application of N	57.08	VII
7.	Application of P	61.88	VI
8.	Application of K	53.96	VIII
9.	Application of FYM	92.08	III
10.	Irrigation intervals	94.38	II
11.	Plant protection measures	13.17	XI
12.	Application of growth regulators	6.67	XII
	Overall adoption	**56.39**	

The adoption of 'plant population', 'irrigation intervals', 'application of FYM', 'plantation depth', 'recommended method of propagation' and 'application of phosphorus' were appropriate as they might have got good return due to the adoption of these practices. As these practices neither require any extra investment, nor complicated in adoption, the crop would give better results.

The farmers had inadequately adopted the practices like 'application of nitrogen' and 'application of potash'. The probable reason for low adoption of above practices might be due to the reason of lack of knowledge about adequate quantity of nitrogen and potash fertilizers to be applied in kinnow orchard.

The low adoption of 'plant protection measures' which might be due to the reason that most of the kinnow growers were not using insecticides. It might also be due to the need of special equipments for spray or their hazardous effect on human beings and non-availability of suitable insecticides and fungicides. The very low adoption of 'application of growth regulators' might be due to the reason that the farmers do not had good knowledge about suitable growth regulators for kinnow and lack of proper technical guidance by the supervisor about this aspect. These findings are in conformity with the finding of Bhujabal and Kadam (1995), Meena (2004), Jhajharia (2005) and Kumawat (2005).

Relationship between selected independent variables and extent of adoption of kinnow production technology: It is evident from Table 3, that knowledge level, education level, size of land holding and occupation were positively and significantly associated where as their market distance was negatively and significantly associated, while social participation and irrigation potentiality were positively and nonsignificantly associated with the adoption level of farmers about kinnow production technology.

Knowledge level: the knowledge level of farmers was positively and significantly associated with the extent of adoption of kinnow production technology. This might be due to the fact that the adoption of any recommended kinnow production technology depends upon accurate and up-to-date knowledge about it the farmers have. The findings of study are in conformity with the findings of Yadav (1997) and Agarwal (2000).

Educational level: The level of education of farmers was positively and significantly related with their extent of adoption of kinnow production technology. It means that the farmers with higher education were subjected to higher adoption. This might be due to the fact that as the level of education increases, it also helped in forming the positive attitude towards the kinnow production technology. The findings of study are in conformity with the findings of Agarwal (2000) and Meena (2004).

Table 3. Relationship between selected independent variables and extent of adoption of kinnow production technology n=120

S. No.	Independent variables	Coefficient of correlation (r)
1.	Knowledge level	0.2119*
2.	Education level	0.2892**
3.	Social participation	0.0193
4.	Size of land holding	0.242*
5.	Market distance	-0.2961**
6.	Irrigation potentiality	0.169
7.	Occupation	0.221*

* = Significant at 0.05 level of probability, ** = Significant at 0.01 level of probability

Social participation: The degree of social participation of farmers was found positively and non-significantly related with their extent of adoption of kinnow production technology. It means it do not have much significant role in adoption. This might be due to the fact that the farmers who had habit of participation in social, political and other activities may not have much time for attending the trainings, demonstrations etc. The findings of study are in conformity with the finding of Yadav (1997) and Meena (2004). However the findings are in contradiction of the findings of Bhujbal and Kadam (1995).

Size of land holding: The size of land holding of farmers was found positively and significantly associated with their extent of adoption of kinnow production technology. It means this variable had exerted a significant influence on the adoption. The results seem to be quite natural because of the fact that big farmers can take the risk of adoption of new and improved technology. The findings of the study are in conformity with the findings of Agarwal (2000) and Meena (2004). However the findings are in contradiction of the findings of Jhajharia (2005).

Market distance: The market distance was negatively and significantly related with the extent of adoption of kinnow production technology. It means less the market distance, more is the

adoption. The findings might be so due to the reason that the farmers who live near to market may adopt more important production technology due to being market minded and may adopt the crops according to the market trend. The results are in accordance with findings of Yadav (1997) and Meena (2004).

Irrigation potentiality: The irrigation potentiality was positively and non-significantly associated with the adoption level of farmers about the kinnow production technology. It means irrigation potentiality exerted a non significant effect on their adoption level. The above finding is in conformity with findings of Meena (2003).

Occupation: The occupation of kinnow growers was found positively and significantly related with extent of adoption of kinnow production technology. It means occupation of farmers exerted its influence on the adoption of kinnow production technology. This might be due to the fact that majority of the respondents cultivars adopting kinnow production technology because farming was main occupation for their livelihood. The findings of the study are in conformity with the findings of Kumawat (2005).

CONCLUSION

Based on the findings, it could be concluded that the majority of respondents (65.00 per cent) were medium adopters, 16.67 per cent respondents were low adopters and only 18.33 per cent of responded were high adopters of kinnow production technology. The variables like knowledge level, education level, size of land holding and occupation were positively and significantly associated where as their market distance was negatively and significantly associated, while social participation and irrigation potentiality were positively and non-significantly associated with the adoption level of farmers about kinnow production technology.

It may be due to the fact that various extension activities like demonstration, training etc, are frequently organized by the extension functionaries in the villages, which may have helped in convincing the farmers about the kinnow production technology and resulted in increasing the adoption of kinnow production technology by the farmers. But still there is needed to convert these medium adopters into high adopters and low adopters into medium adopters. Therefore, all the essential supplies and service for transfer of technology through extension activates should be made available to convince the farmers about recommended production technology of kinnow.

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