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ADOPTION OF RECOMMENDED CULTIVATION PRACTICES AMONG SWEET LIME GROWERS

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ABSTRACT

The present study entitled "Adoption of recommended cultivation practices among sweet lime growers" was conducted in Kannad, Vaijapur and Gangapur tehesils of Chhatrapati Sambhaji Nagar district of Maharashtra state. A sample of 120 respondents was drawn randomly from 12 villages. From each village 10 sweet lime growers were chosen from selected villages. Ex post facto research design was followed in the present investigation. The present investigation was carried out in Chhatrapati Sambhaji Nagar district of Marathwada region and found that the progressive growers of the village were found to be the most credible source of information for the sweet lime growers. The soil testing recommendation; loosening of soil; use of recommended rootstock; user of recommended variety; planting method; plantation of seedling in pit; plant to plant distance; proper age of the graft; application of FYM and recommended dose of fertilizer and micronutrients; method of irrigation; training and pruning; weed management and pest management; choice of bahar and disease management were the practices partially had knowledge by more than half of the sweet lime grower, along with the information about variables namely adoption of recommended cultivation practices among sweet lime growers. Finding revealed that, majority (75.83%) of the growers had medium level of adoption, followed by 12.50 per cent of them had high level of adoption and 11.67 per cent of growers had low level of adoption, respectively about recommended cultivation practices of sweet lime.

Keywords **:** Adoption, sweet lime, growers, recommended cultivation practices, majority.

Introduction

Horticulture plays an important role in Indian economy. It is a branch of agriculture concerned and intensively cultured parts directly used by man for food and aesthetic purposes. Horticulture accounts for about 30% of India's agricultural GDP from 13.08% of cropped area. Share of horticulture in agricultural production was more than 33%. Citrus is one of the most important fruit crops of the world grown in more than 100 countries.

Sweet lime (Citrus limetta), alternatively considered to be a cultivar of Citrus Limon, C. Limon 'Limetta', is a species of citrus along with other fruits such as mandarins, lemons, grape fruits and limes. Sweet lime is native to South Asia and South-East Asia and also cultivated in the Mediterranean Basin. Sweet lime commonly known as mousambi, mosambi or musambi in north India and musambi in Kannada and Malayalam, Bathaya Kaayalu/Cheeni Kaayalu in Telugu, and Sathukudi in Tamil. Sweet lime accounts for the highest value share of total citrus produced, followed by grapefruits, lemons, mandarins and limes.

Sweet lime tree is distinctive in appearance, medium-large in size and of spreading but irregular growth habit, with thick, thorny branches and medium-dense foliage. The fruits are small, round to slightly oblong and have a thin, smooth rind with prominent oil glands. At maturity, the rind is pale green to orange-yellow and flavour is insipid due to lack of acidity in the fruit, pulp is pale yellow, tender and juicy.

It is commercially propagated by budding method in India, as the progeny is true-to-type and mortality of budded seedlings is also less and are free from virus. Generally, 4-5 years are required for first fruiting. It is also cheapest and easiest method of propagation. Disease free nursery stock is the prerequisite for establishing a viable and productive orchard. National Research Centre for citrus, selection of mother plants for seed is the most crucial part of production of disease-free planting materials. The best season of planting the seedlings is June to August.

Materials and Methods

The present study was conducted in the Chhatrapati Sambhaji Nagar district of the Marathwada region of Maharashtra state. From this region Chhatrapati Sambhaji Nagar district was purposively selected for research purpose due to largest area of sweet lime growers. From Chhatrapati Sambhaji Nagar district out of nine tehsils, only three tehsils i.e. gangapur, vaijapur and kannad have been purposively selected because their tehsil constituted maximum area under sweet lime cultivation. From each selected tehsil four villages were randomly selected. Thus, total 12 villages were selected for the study. From each village 10 respondents were selected randomly. Thus, a total of 120 respondents were selected as sample respondents for this study. These selections were done by using a simple random sampling method. The ex-post-facto research design used for present study. An interview schedule was prepared in view of the objective of the study and data were collected by personal interview of the selected sweet lime growers at their home or farms. The collected data was organized, tabulated and analyzed with the help of statistical tools like frequency, mean, percentage, standard deviation, correlation of coefficient (r), and multiple regression.

Results and Discussion

1. Adoption of sweet lime growers about recommended cultivation practices

2.

Table 1: Distribution of growers according to their adoption of recommended cultivation practices of sweet lime

SL. No.	Statement	Adopted		Partially Adopted		Not Adopted	
		Freq.	Per cent	Freq.	Per cent	Freq.	Per cent
1	Soil testing recommendation	43	35.83	13	10.83	64	53.33
2	Mechanization - Loosening of soil with rotavator	76	63.33	15	12.50	29	24.17
3	Use of recommended rootstock - Light - Medium soil - Jamberi Heavy black cotton soil - Rangpur lime	46	38.33	12	10.00	62	51.67
4	Use of recommended variety - (Nucellar, Phule Mosambi, Satgudi, Katol gold)	75	62.50	10	8.33	35	29.17
5	Planting Method - (Ridge and furrow, Raised bed)	64	53.33	25	20.83	31	25.83
6	Plantation of seedlings in pit - Pit size (60X60X60 cm)	27	22.50	23	19.17	69	57.50
7	Plant to plant distance (Recommended Spacing) - (4X4m)	63	52.50	10	8.33	47	39.17
8	Age of Graft (3 months)	48	40.00	14	11.67	58	48.33
9	Application of FYM to tree - 50kg FYM + 5kg Neemcake	51	42.50	32	26.67	37	30.83
10	Fertigation - Application of fertilizer as per recommendation (600gN, 200gP,100gK)	38	31.67	36	30.00	46	38.33
11	Application of micronutrients ($CuSO_4$, $MnSO_4$, $ZnSO_4$, $MgSO_4$) to tree- Soil application -100g/pl each Spraying-0.2% each	47	39.17	34	28.33	39	32.50
12	Method of Irrigation - Single ring method to irrigate	31	25.83	4	3.33	85	70.83
13	Double ring method to irrigate- In summer 8-10 days and in winter 12-15 days interval	34	28.33	10	8.33	76	63.33
14	Drip Irrigation to irrigate	72	60.00	10	8.33	38	31.67
15	Bordeaux paste application- 1% Bordeaux paste:1kg lime +1kg $CuSO_4$+10 lit water Twice in a year Before monsoon: Feb-Mar After monsoon: Oct-Nov	105	87.50	15	12.50	0	0.00
16	Training and Pruning (Deadwood removal)	105	87.50	13	10.83	2	1.67

17	After training and deadwood removal application of fungicide over it	101	84.17	11	9.17	8	6.67
18	Production of 800-1200 fruit as per recommendation to per plant for better quality	27	22.50	36	30.00	57	47.50
19	Weed Management-Diuron/ Gramoxone	66	55.00	19	15.83	35	29.17
20	Choice of Mrig Bahar (June -July)	115	95.83	0	0.00	5	4.17
21	Choice of Ambia Bahar (Jan. - Feb.)	119	99.17	0	0.00	1	0.83
22	Pest management						
A	Application to control measures for citrus psylla (Spraying the plant with phosphomidon (0.025%) and parathion (0.05%)	65	54.17	24	20.00	31	25.83
B	Application to control measure for Bark eating caterpillar as per recommendation-Close the bore with wet soil after filling it by the solution of Monocotophos 36% or Dichlorvas 76 % with the help of droper, twice or thrice in year	68	56.67	19	15.83	33	27.50
C	Application to control measure for Fruit sucking moth as per recommendation-Dissolve 100 g jiggery + Malathionin 20ml + 1 lit water. Put the solution in jag at hang over the tree.	53	44.17	14	11.67	53	44.17
23	Fruit thinning by hand/Ethrel	67	55.83	20	16.67	33	27.50
24	Disease Management-(Gummosis - Painting 1 m of the stem above the ground level with Bordeaux paste)	88	73.33	12	10.00	20	16.67
25	Post-harvest Management	8	6.67	7	5.83	105	87.50

The result regarding the production technology wise adoption by sweet lime growers revealed from table 4.15 that, majority of the growers 53.33 per cent had not adopted soil testing recommendation while 35.83 per cent of growers adopted and 10.83 per cent of growers partially adopted soil testing practice. Most of the growers 63.33 per cent had adopted, while 12.50 per cent had partially adopted and 24.17 per cent had not adopted the recommended mechanization of loosening of soil with rotavator at their orchard.

Regarding to the adoption of recommended rootstock, 51.67 per cent had not adopted, 38.33 per cent of growers adopted and 10.00 per cent of the growers had partially adopted the recommendations. Again most of the growers 62.50 per cent had adopted, while 08.33 per cent had partially adopted and 29.17 per cent had not adopted the recommended varieties. It was observed that 53.33 per cent of growers had adopted the recommended planting method, while 20.83 per cent of growers had partially adopted and 25.83 per cent of growers had not adopted the recommended planting method.

Use of recommended pit size 22.50 per cent of growers adopted, while 57.50 per cent are not adopted and 19.17 per cent are adopted partially. Also use of recommended spacing 52.50 per cent of growers adopted, while 39.17 per cent are not adopted and 08.33 per cent are partially adopted. Regarding to the adoption of recommended age of graft 48.33 per cent of growers not adopted, while 40.00 per cent had adopted and 11.67 per cent had partially adopted.

Regarding to application of FYM and neem cake 42.50 per cent had adopted, 26.67 per cent of partially adopted, while 30.83 per cent of respondents not adopted recommended application of FYM and neem cake. Fertigation technique had adopted by 31.67 per cent of the growers, while 38.33 per cent of the growers had not adopted and 30.00 per cent of growers had adopted partially. However, 39.17 per cent of the respondents had adopted and 28.33 per cent of respondents partially adopted recommendations about application of micronutrients, while 32.50 per cent of the growers had not adopted.

Moreover, cent per cent of the growers had adopted the irrigation facility at their orchard. Single ring method to irrigate orchard had adopted by 25.83 per cent, while 70.83 per cent of growers not adopted and 3.33 per cent growers partially adopted. Majority of the growers 63.33 per cent had not adopted double ring method to irrigate and only 28.33 per cent of growers was adopted and 8.33 per cent growers partially adopted, while 60.00 per cent of the respondents had adopted drip irrigation method to irrigate sweet lime orchard, while 8.33 per cent growers partially adopted and 31.67 per cent not adopted.

According to the data, it is revealed that 87.50 per cent of the respondents had adopted, 12.50 per cent of

the respondents had partially adopted the recommendation about Bordeaux paste application.

It was observed that the operation of training and pruning (deadwood removal) had adopted by the growers, in which 87.50 per cent growers adopted, while 10.83 per cent had partially adopted and only 1.67 per cent had not adopted. However, after operation of deadwood removal 84.17 per cent had adopted application of fungicide over it after deadwood removal, while 09.17 per cent of respondents partially adopted and 06.67 per cent was not adopted. Also it was noticed that about 47.50 per cent had not adopted the production of 800-1200 fruits per plant as per recommendation for the better quality, while 30.00 per cent growers partially adopted and 22.50 per cent had adopted it.

More than 55.00 per cent of the growers adopted weed management technique and 15.83 per cent of the growers had partially adopted and 29.17 per cent of growers not adopted weed management. Mrig Bahar had adopted by 95.83 per cent of growers, while only 04.17 per cent of growers not adopted. Ambia bahar had adopted by 99.17 per cent of the growers and 0.83 per cent growers had not adopted recommended time and method of harvesting of Ambia bahar.

It was noticed from the data that 54.17 per cent of the growers had adopted control measures recommended for pests viz. Citrus psylla, 20.00 per cent partially adopted and 25.83 per cent not adopted. For bark eating caterpillar 56.67 per cent of the growers had adopted control measures recommended for pests, 15.83 per cent partially adopted and 27.50 per cent not adopted. For fruit sucking moth 44.17 per cent of the growers had adopted control measures recommended for pests, 11.67 per cent partially adopted and 44.17 per cent not adopted the recommended control measures. Fruit thinning was adopted by 55.83 per cent growers and fruit thinning by use of hand/ethrel 27.50 per cent had not adopted remaining 16.67 per cent of growers partially adopted. Nearly, 73.33 per cent of the growers had adopted measures to control gummosis and 16.67 per cent had not adopted while, 10.00 per cent was partially adopted. About 87.50 per cent of growers not adopted the post-harvest management, while 06.67 per cent growers adopted and 05.83 per cent growers partially adopted the post-harvest management.

Table 2: Distribution of sweet lime growers according to their overall adoption of recommended cultivation practices of sweet lime

SL. No.	Category	Frequency	Percentage
1	Low (Up to 51)	14	11.67
2	Medium (from 52 to 66)	91	75.83
3	High (67 and above)	15	12.50
	Total	**120**	**100.00**

The result from the table 2 showed that, majority (75.83%) of the growers had medium level of adoption, followed by 12.50 per cent of them had high level of adoption and 11.67 per cent of growers had low level of adoption regarding recommended sweet lime production technology.

The results deduced that, majority (76.67%) of the growers belonged to medium category of adoption about recommended cultivation practices of sweet lime. The potential reason for the above fact could be that the sweet lime growers had medium extension contact which results in medium participation in various training programme. Due to medium level of participation the adoption about the improved cultivation practices of sweet lime was at medium level.

These findings are in line with the findings of Naik (2013) and Baswante (2016).

Conclusion

It is concluded that regarding the relationship between the personality trait i.e. profile and the adoption of sweet lime growers. It was found that farming experience, education, family size, occupation, annual income, land holding, area under orchard, sources of irrigation, extension contact, market orientation and innovativeness had positive and highly significant relationship with adoption.

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