Indian Journal of Extension Education
Vol. 50, No. 1 & 2, 2014 (90-92)

Constraints in Adoption of Improved Production Technology of *Mandarin*

R. M. Ghadge[1]

ABSTRACT

The present investigation was carried out in Nagpur district of Maharashtra. A sample of 100 respondents spread over 10 villages of two blocks was selected for the study. The present study revealed that majority of farmers was found to have medium level of adoption of improved production technology of *mandarin*. The study indicates that farmers had high adoption level of practices viz, the irrigation management, time and spacing for planting, and low adoption practices viz, different varieties of orange, and rejuvenation of old orchards. So there is need to adopt full improved recommended package of practices for increasing the productivity with quality in mandarin orange. The orange growers perceived the constraints like irregular fruit bearing, non availability of disease free improved planting materials, *etc*.

Key word : Orange growers, adoption, improved production technology

INTRODUCTION

Horticulture has emerged as most important sector for commercial agriculture, which transformed the subsistence agriculture into high value commercial enterprise leading to the revolutionary changes in the socio-economic status of farmers in various part of country. Citrus is the third largest fruit industry in India after banana and mango in terms of area under cultivation. But comparative analysis of yield of citrus fruits shows that our orange fruit production per hectare is very low (9-10 t/ha) as compared to developed countries. The unit area of production of mandarins depends mainly on the technical know-how possessed and extent of its use in the production by the orange growers. Due to globalization and increasing domestic demands of fruits; the market potential, processing and export- import area has boost up very rapidly. There is great scope of increasing the fruit production by increasing the fruit productivity besides bringing more area under the fruit crops to cater the demands of growing population.

But for last several years, citrus orchards of Maharashtra particularly those of Nagpur region have suffered due to several biotic and abiotic stress leading to degeneration of citrus plantation on the other hand and falling productivity on other. The low production of mandarin fruits may be due to the non-adoption or poor adoption of improved production technology of mandarin cultivation by the farmers and they may be facing some constraints in its adoption at their own farm which may affect adoption of improved production technology of mandarin cultivation. Hence this is a challenging task for the scientists and the farmers. Under such condition it is quite imperative that reasons for the technological gap in *mandarin* should be identified and studied critically in order to face the existing challenge of low productivity and decline of mandarin orchards. In this context the present study was undertaken to study the adoption of improved production technology of mandarin cultivation and to identify the constraints as perceived by orange growers.

METHODOLOGY

The study was carried out in Nagpur district of Maharashtra to know the extent of adoption of improved production technology of mandarin cultivation by orange growers and to identify the constraint perceived by them in its adoption at their own farm. A sample of 100 orange growers was selected randomly from 10 villages of two purposively chosen blocks having highest area under orange cultivation and from each village 10 growers as respondents. The data were collected with the help of well structured interview schedule. Before actual investigation for data collection the interview schedule was pre-tested checked, tabulated and analyzed with the help of frequencies, percentage, mean and standard deviation.

A list of 14 major orange cultivation practices was prepared. The extent of adoption of each practice was measured on three point continuum scale. The score `0' was given for never adopting cultivation practice, `1' for occasional and `2' for regular adopting cultivation practice. Respondents were categorised as high, medium and low adoption level on the basis of mean and standard deviation. The practice-wise adoption of improved

Regional Fruit Research Station, Katol, dist. Nagpur-441302, Maharashtra, India.

production technology of *mandarin* cultivation was ranked based on mean percent score (MPS) values. The constraints perceived by orange growers in adoption of improved orange production technology were tabulated based on frequencies and percentage.

RESULTS AND DISCUSSION

Adoption of improved production technology of *mandarin* cultivation

It is apparent from the table 1 that majority of farmers (62%) were found to be medium adopters, while 18 percent farmers were low adopters and 20 per cent of farmers were high adopters of improved production technology of mandarin cultivation.

Table 1: Distribution of farmers under different adoption categories towards improved production technology of *mandarin* cultivation

Categories of adoption level	Respondents	
	No. of farmers	Percent of farmers
Low adoption (Below 6.47)	18	18.00
Medium adoption(6.47 to 17.71)	62	62.00
High adoption (above 17.71)	20	20.00

Mean=12.09 S.D. =5.62

This clearly indicates the need to put more efforts by all the concerned to convince the farmers about improved production technology of *mandarin* cultivation. The results are in conformity with finding of Thakre *et al.*(1996) and Meena V (2004)

Practice-wise adoption of improved production technology of *mandarin* cultivation

In case of extent of adoption of improved production technology of *mandarin* cultivation, the farmers had mostly adopted the irrigation management, time and spacing for planting, intercropping and bahar treatment. Such practices were adopted by farmers as they had good return due to adoption of these practices, also these practices neither require any extra investment nor complicated in using it.

The medium adoption was found in practices like fertilizer management, suitable land for orange plantation, weed control, pruning and training, plant protection measures, selection of planting material. The probable reason for medium adoption of these cultivation practices may be due to lack of sufficient knowledge about these technologies.

Table 2: Extent of adoption of improved production technology of *mandarin* cultivation by farmers

Package of practices	M P S	Rank
Suitable land for orange plantation	46.50	VI
Different varieties of orange	17.50	XIII
Selection of planting materials	33.50	X
Time and spacing for planting	70.00	II
Fertilizer management	51.00	V
Irrigation management	84.00	I
Pruning and training	43.50	VIII
Weed control	46.00	VII
Intercropping	65.00	III
Bahar treatment	53.50	IV
Fruit drop control	25.50	XI
Plant protection measures	35.50	IX
Harvesting and storage	19.00	XII
Rejuvenation of old orchards	10.00	XIV

The low adoption was found in cultivation practices like fruit drop control, proper harvesting and storage, different varieties of orange and rejuvenation of old orchards. The low adoption of these practices may be due to lack proper technical guidance provided to them by state department of agriculture. The findings of present study are in line with Nainawat (1990) and Meena v (2004).

Constraints in mandarin cultivation as perceived by orange growers

The constraints perceived by orange growers were categorised into four parts and data regarding these constraints are presented in table 3.

The major constraints perceived by orange growers were irregular fruit bearing, non-availability of disease free improved planting materials, degeneration of *mandarin* plantation, inadequate and improper doses of F.Y.M. and chemical fertilizers. The other problems as expressed by a majority of farmers were decline in productivity and life period of mandarin plantation, high incidence of disease (phytopthora) and pest, problem of growing commercial and food crop simultaneously, inadequate water supply during summer, *etc.* These finding clearly indicates the need to develop strong research based centres to tackle day to day problems and offer solution to orange growers. All nurseries need to strengthen by providing adequate funds, technical man powers and high-tech inputs to supply the best planting materials in right quantity at right time and at reasonable price. Also there is need to train and assist the orange growers to go for modern agro-technology and thereby increase productivity and quality for orange. To overcome the marketing constraints, there is need to develop networks of marketing on co-operative basis.

Table 3: Constraints perceived by farmers in adoption of improved production technology of mandarin cultivation in the study area.

n=100

Constraints perceived by farmers	Frequency	Percentage
Technical constraint		
Lack of technical know-how	19	19.00
High incidence of disease (Phytopthora) and pest	44	44.00
Irregular fruit bearing	68	68.00
Degeneration of mandarin plantation	56	56.00
Decline in productivity and life period of mandarin plantation	46	46.00
Production constraints		
Non availability of disease free, improved planting materials	46	46.00
Inadequate and improper doses of F.Y.M. and chemical fertilizers	57	57.00
Problem of growing commercial and food crop simultaneously	42	42.00
Inadequate water supply during summer	39	39.00
Improper management of orchards	29	29.00
Storage and marketing constraints		
Lack of storage facility	17	17.00
Lack of processing unit	19	19.00
High fluctuation of market price	21	21.00
Lack of market knowledge	14	14.00
Exploitation by middleman	20	20.00
General constraints		
Plantation in unsuitable land	28	28.00
Irregular rainfall and change in climate	27	27.00
Irregular supply of electricity for irrigation	16	16.00
Timely non-availability of extension service in area for technical guidance	23	23.00

CONCLUSION

It may be concluded that a majority of farmers had medium adoption of improved production technology of mandarin cultivation. The extents of adoption were higher in the irrigation management, time and spacing for planting, intercropping, *bahar* treatment etc than the other adopted practices of *mandarin* cultivation. On the other hand less adoption was found in plant protection measures, selection of planting materials, fruit drop etc. Hence it may be pointed out that it is no use to adopt some of the improved practices only and neglecting some others one. It is necessary to use the complete package of the improved practices of *mandarin* cultivation for reaching maximization in crop yields.

The major constraints perceived by orange growers were irregular fruit bearing, non availability of disease free improved planting materials, degeneration of mandarin plantation, inadequate and improper doses of F.Y.M. and chemical fertilizers, *etc.* Unless these constraints are appropriately addressed; there is less hope of revival of mandarin orange orchards. Hence tremendous scope exists for the use of improved production technology of *mandarin* cultivation to increase the production and quality of mandarin orange.

Paper received on : June 18, 2014
Accepted on : July 23, 2014

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