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Knowledge of mandarin growers about mandarin production technology

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Abstract
The present study was conducted on "Knowledge and adoption of mandarin production technology by the growers" was purposively conducted in Yavatmal district of Vidarbha region. The study was conduted in Digras, Babulgaon, Ner talukas. The sample constituted 120 mandarin growers from 12 villages. Ex-post facto research Design was used for present study. Data from the respondents were collected by personally interviewing with the help of structured and pretested interview schedule. Collected data were classified, tabulated and analysed by using statistical methods like frequency, percentage, mean, standard deviation, correlation coefficient. It is found that maximum 63.33 percent of the respondents had possessed medium level of knowledge followed by 22.50 percent of the respondents had possessed high level of knowledge and 14.17 percent of the respondents had possessed low level of knowledge about production technology of mandarin.

Keywords: Knowledge, production, technology, mandarin

Introduction
The proficiency of farmers in mandarin production technology is a pivotal determinant of agricultural productivity and sustainability. This research delves into the depth and breadth of knowledge that mandarin growers possess regarding contemporary production technologies, encompassing advanced cultivation methods, integrated pest and disease management, precision irrigation, and post-harvest practices. Mandarin cultivation, being a high-value horticultural enterprise, necessitates the adoption of sophisticated technologies to enhance yield quality and quantity. The extent of farmers' knowledge about these technologies directly influences their willingness and ability to implement them, thereby impacting the overall efficiency and profitability of mandarin production. Factors such as educational attainment, access to agricultural extension services, and participation in training programs are instrumental in shaping farmers' knowledge base. In Citrus group Mandarin (Citrus reticulate), also known as orange, belongs to family Rutaceae and origin China. The world famous Mandarin orange locally known as 'Nagpur Santra' is grown in Vidarbha region of Maharashtra state. India ranks third in orange production followed by Mango and Banana. It occupies about 10 percent of total area under fruit, next to Mango and Banana. Mandarin occupies about 40 percent of total area under citrus cultivation in India. In Yavatmal district of Vidarbha, but since the last decade many of the orchard have not performed well. There are so many problems with mandarin growers like poor soil conditions, lack of knowledge of use of recommended dose of fertilizers, improper method of irrigation, faulty practices to control various pest and diseases, improper methods of training and pruning, incorrect choice of bahar, etc.

The objective of this study is to systematically assess the knowledge levels of mandarin growers and identify critical knowledge gaps that may impede the adoption of innovative production technologies. By elucidating these gaps, the research aims to provide actionable insights for policymakers, extension agents, and agricultural educators to formulate targeted strategies that enhance farmers' technological competencies. Ultimately, this will contribute to optimizing mandarin production systems, promoting sustainable farming practices, and improving the economic well-being of mandarin growers.

Materials and Methods
The present study was undertaken in the Vidarbha region of Maharashtra state. The study was conducted in Yavatmal district. Out of sixteen talukas of Yavatmal district, three talukas namely Digras, Babulgaon, Ner, were selected purposively as maximum area under mandarin

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cultivation. Four villages were selected randomly from each talukas. Thus, twelve villages from three talukas were selected for the study. From the selected village, ten (10) respondents from each villages were selected randomly. In this way, from 12 villages 120 mandarin growers selected for the present study. An Ex-post-facto research design was followed for the study. Data was collected by personally interviewing the Mandarin growers. The collected data was analyzed, classified and tabulated. Statistical tools such as frequency, percentage, mean, standard deviation, and coefficient of correlation were used to interpret findings and draw conclusions.

Specific Objective
To study the knowledge of respondents (mandarin growers) about mandarin production technology

Results and Discussion
i) Knowledge of respondents about Mandarin production technology

Table 1: Distribution of respondents according to their overall knowledge about mandarin production technology

Sr. No	Practices	Respondents (n =120)	
		Frequency	Percentage
1	Soil testing	32	26.66
2	Application of fertilizers as per Recommendation	108	90.00
3	Recommended plant spacing	115	95.83
4	Use of recommended pit size	96	80.00
5	Use of recommended rootstock	45	37.50
6	Application of FYM	34	28.33
7	Fertigation	92	76.66
8	Application of micronutrient	91	75.83
9	Bordeaux paste application	110	91.66
10	Irrigation facility	120	100
11	Flooding Method of irrigation	78	65.00
12	Double ring method to irrigate	12	10.00
13	Drip irrigation to irrigate	98	81.66
14	Mulching with dried grass or polythene	32	26.66
15	Operation of deadwood removal	105	87.50
16	After deadwood removal application of fungicide over it	65	54.16
17	Production of fruit as per recommendation to per plant for better Quality	95	79.16
18	Recommended Mechanization	80	66.66
19	Weed Management	91	75.83
20	Selection of MrigBahar	61	50.83
21	Selection of AmbiaBahar	120	100
22	Control measures for citrus psylla	31	25.83
23	Control measure for Bark eating caterpillar	27	22.50
24	Control measure for Fruit sucking moth	59	49.16
25	Control measure for mites	48	40.00
26	Fruit thinning by hand	90	75.00
27	Fruit thinning by use of ethrel	95	79.16
28	Measures to control Gummosis.	88	73.33

It was revealed from Table 1 that, 100 cent percent of the respondents had knowledge about irrigation facilities and ambai bahar which are the essential practices on the part of mandarin growers. The mandarin crop is a high valued crop needs to adopted the improved technologies hence, recommended planting spacing 95.83 percent, bordeux paste application 91.66 percent and 90.00 percent of the respondents had knowledge about application of fertilizers as per recommendations.

The other important practices namely, operation of deadwood removal 87.50 percent, Drip irrigation to irrigate 81.66 percent, use of recommended pit size 80.00 percent, Fruit thinning by use of ethrel 79.16 percent production of fruits as per recommendations to per plant for better quality 79.16 percent, weed management 75.83 percent, fertigation 76.66 percent and application of micro-nutrients 75.83 percent were known by the mandarin growers. The knowledge about fruit thinning by use of hand 75.00 percent and measures to control gummosis 73.33 percent, were possessed by the mandarin growers. The other major practices known by the mandarin growers were recommended. Mechanization 66.66 percent, flooding method of irrigation 65.00 percent. Nearly, one half of the mandarin growers had knowledge about after deadwood removal application of fungicide over it 54.16 percent and mrig bahar 50.83 percent, control measure for mites 40.00 percent. Nearly one fourth of the mandarin growers had knowledge about recommended Use of recommended rootstock 37.50 percent, application of FYM 28.33 percent, soil testing 26.66 percent, mulching with dried grass or polythene 26.66 percent, control measures for citrus psylla 25.83 percent. Minimum number of the respondent had knowledge about Control measure for Bark eating caterpillar 22.50 percent followed by Double ring method to irrigation 10.00 percent.

ii) Overall knowledge about production technology of mandarin

Table 2: Distribution of respondents according to their overall knowledge about production technology of mandarin

(n=120)

Sr. No.	Category	Frequency	Percentage
1	Low	17	14.17
2	Medium	76	63.33
3	High	27	22.50
Total		120	100

It is revealed from Table 2 that, 63.33 percent of the respondents had possessed medium level of knowledge followed by 22.50 percent of the respondents had possessed high level of knowledge and 14.16 percent of the respondents had possessed low level of knowledge about production technology of mandarin.

Overall conclusion here is that the respondents possess high knowledge about choose of Ambia bahar, irrigation facilities, recommended plant spacing. Whereas the respondents had minimum knowledge about technologies like measures to control citrus psylla, control measure for Bark eating caterpillar and double ring method of irrigation.

This finding is similar to that finding of More (2016) [2], Kadu (2016) [1] and Prashanth et al. (2018) [3].

Conclusion

It was observed that maximum 63.33 percent of the respondents had possessed medium level of knowledge followed by 22.50 percent of the respondents had possessed high level of knowledge and 14.17 percent of the respondents had possessed low level of knowledge about production technology of mandarin. It's also noticed that 100 cent percent of the respondents had knowledge about irrigation facilities and ambai bahar which are the essential practices on the part of mandarin growers. The mandarin crop is a high valued crop needs to adopted the improved technologies hence, recommended planting spacing 95.83 percent, bordeux paste application 91.66 percent and 90.00 percent of the respondents had knowledge about application of fertilizers as per recommendations, while on the other hand minimum number of the respondent had knowledge about Control measure for Bark eating caterpillar 22.50 percent followed by Double ring method to irrigation 10.00 percent.

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