Original Research Article

A STUDY ON THE KNOWLEDGE OF THE FARMERS ABOUT MANDARIN CULTIVATION PRACTICES IN EAST JAINTIA HILLS, MEGHALAYA

ABSTRACT

The main purpose of the study was to determine the extent of farmer's knowledge on orange production. The aforementioned study was conducted inSaipung Block in EastJaintia Hills district, Meghalaya in the year 2022. A descriptive research designed was applied for this study. The primary data was collected from 120 respondents by personal interview method using pre-structure interview schedule.Knowledge of the farmers was measured by asking 18 questions in respect of orange production. Pearson's Product Moment coefficient of correlation (r) was calculated to determine the relationships between independent variables and knowledge of the respondents. Findings showed that 60.83 per cent of the respondents have medium level of knowledge mandarin plantation, 22.5 per cent have low level and 16.67 per cent have high level of knowledge about mandarin production. Co-efficient of correlation (r) analysis indicated that educational qualification, social participation, mass media exposure, farming experienceand extension contact were found to be positively significant whereas variables like age, family Size, marital status, land holding, annual income and occupation were found to have no relationship with the knowledge of the farmers. The finding clearly indicates that the respondents have medium knowledge over mandarin cultivation and most of the selected independent variables had positively and significant correlated with the knowledge of the farmers.

Keywords: Knowledge, correlation co-efficient, mandarin.

INTRODUCTION

Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. It has to support almost 17 per cent of world population from 2.3 per cent of world geographical area and 4.2 per cent of world's water resources. Increasing population, increasing average income and

globalization effects in India will increase demand for quantity, quality and nutritious food, and variety of food. Therefore, pressure on decreasing available cultivable land to produce more quantity, variety and quality of food will keep on increasing.

In India citrus is cultivated over an area of near about 923.2 thousand hectares with an estimated production of 8607.7 thousand metric tonnes. The leading states for citrus fruits are Maharashtra, Andhra Pradesh, Telangana, Karnataka, Madhya Pradesh, Punjab and Assam. Because of the sweet-sour appealing taste and easy peelable quality of the rind, Nagpur mandarin is the most popular fruit among all the oranges in the country.C*itrusreticulata* is commonly known as Mandarin orange and is a large, distinctive and highly varied group that includes some of the finest and most highly reputed citrus fruits. It is not only famous due to its gorgeous appearance, pleasant taste but also for seed-lessness and easy peeling characters. Their fruits vary in size and colour, with some being seedless. Tangerines, for example, are the brightly-coloured variety of Mandarins. The Mandarin orange's most distinctive feature is its easy-to-peel skin, which is so easy to remove that they are also called kid-glove or loose-skin oranges. The term *tangerine* and *mandarin* are used interchangeably and indicate easy peelers only **(Ladaniya, 2008).**

A mandarin orange contains 85% water, 13% carbohydrates, and negligible amounts of fat and protein . Among micronutrients, only vitamin C is in significant content (32% of the Daily Value) in a 100-gram reference serving, with all other nutrients in low amounts . The fruits weigh 10.31 to 109.90 g, 7-14°Brix of Total Soluble Solids (TSS), 0.67-1.31 per cent acidity, 1.83 to 3.95 pH, total sugar 2.07 to 4.65 per cent. **(Wikipedia ,20 April ,2022)**

Meghalaya is favourable for a variety of sub-tropical and temperate fruits. Sub-tropical fruits grown include citrus species, pineapple, banana, papaya, guava and jack-fruit.Khasi Mandarin is adjudged as an important variety, widely known throughout the North Eastern region as well as outside and having good acceptance among the consumers.

Khasi Mandarin (*Citrus reticulata Blanco*.) is one of the most widely cultivated and important commercial fruit crop of Meghalaya Khasi mandarin is locally called as 'soh-niamtra' (in khasi language). It is mainly grown in the sub-mountainous tract along the Indo-Bangladesh border region of the state and contributes about 79.74 per cent of the total citrus production of the state. It is the most economically fruit crop as itplays a vital role in the socio-economic development of the people in this

region. Khasi mandarin is well known for its quality, fruit colour, unique sugar-acid blend and shelf life which make it the most popular citrus cultivar in northeastern region of the country. It covers the largest area in the region due to its commercial value.

The total area of Khasi mandarin in Meghalaya is 9.26 thousand hectare and production is 44.02 thousand MT. It is cultivated in all the eleven districts of Meghalaya with East Khasi Hills and West Khasi Hills districts contributing about 59.74 per cent of the total area and 67.77 per cent of the total production of mandarin in the state **(GoM, 2019)**.

RESEARCH METHODOLOGY

Descriptive research design was followed for this study as it describes the characteristics or phenomenon that is being studied. The study was conducted at East Jaintia Hills,Meghalaya.Saipung block was selected purposively out of 2 blocks. Eight villages were selected randomly from this block and a total number of 120 mandarin farmers were selected proportionately for the present study.

OBJECTIVE

- To analyze the socio-economic characteristics of the respondents,
- To determine the knowledge of the respondents towards mandarin cultivation practices.

RESULTS AND DISCUSSION

Socio-economic profile of orange growers:

Socio-economic profile of the respondents has been studied by considering their age, education, land holding, annual income, marital status, occupation, land holding, farming experience, social participation, mass media exposure and extension contact are showed below.

Table 1:Characteristics of the respondents **(N=120)**

Sl.no	Attributes	Characteristics	*f*	%
1	**Age**	Young age group (up to 35 year)	8	6.67
		Middle age group (36 to 55 year)	79	65.83
		Old age group (above 55 year)	33	27.50
2	**Marital status**	Married	98	81.67
		Unmarried	5	4.17
		Widowed	17	14.16
3	**Family size**	Low (Up to 5 members)	33	27.50
		Medium (5-8 members)	59	49.17
		High (Above 8 members)	28	23.33
4	**Educational qualification**	Illiterate	60	50.00
		Primary school (1to 7^{th})	22	18.34
		High school (7 to 10^{th})	13	10.83
		Intermediate (10 to 12^{th})	12	10.00
		Graduate &above	13	10.83
5	**Occupation**	Farming + Business	63	52.50
		Farming + Government Service	21	17.50
		Farming	36	30.00
6	**Land holding**	Marginal Farmers (< 1hectares)	84	70.00
		Small Farmers (2.51 to 5.00 hectares)	29	24.17
		Medium Farmers (5.0 to 10 hectares)	4	3.33
		Big Farmers (> 10 hectares)	3	2.50
7	**Farming experience**	Low (Up to 10 years)	42	35.00
		Medium (10 to 15 years)	50	41.67
		High (Above 15 years)	28	23.33
8	**Annual income**	Low (Upto 1 Lakh)	21	17.50
		Medium (1-2 Lakhs)	59	49.17
		High (Above 2 lakhs)	40	33.33
9	**Social participation**	Member	40	33.33
		Non Member	80	66.67
10	**Mass media exposure**	Low	49	40.83
		Medium	56	46.67
		High	15	12.50

11	**Extension contact**	Low Medium High	33 64 23	27.50 53.33 19.17

Age:

The perusal of the data given in table 1 revealed that the majority of the respondents (65.83%) were in middle age followed by 27.50 per cent of respondents fall under the category of old age group and 6.67 per cent of the respondents fall under young age group.Similar finding were reported by **Jamdhahde(2015) and Meena*et al*., (2017)**

Marital status:

The majority of the respondents (81.67%) were married, 14.16 per cent were widowed and only 4.17 were unmarried.

Family size:

It was found that 49.17 per cent of the respondents were having a family size of 5-8 members, 27.50 per cent upto members and 23.33 per cent above 8 members.Similar finding were reported by **Adhikari*et al*.,(2021)**

Occupation:

Majority of the respondents (52.50) were engaged in farming and business as their main occupation. The table above also indicated that 50.00 per cent of the respondents were illiterate followed by 18.34 per cent was educated up to primary subsequently 10.83 per cent each till high school and graduate& above whereas the remaining 10% were educatedup to intermediate. Finally the results clearly indicates that majority of the respondents were illiterate.Similar finding were reported by**Yogita*et al*.,(2017)**

Farming experience:

It was found that 41.67 per cent of the respondents were having a farm experience of 10-15 years, 35 per cent have experience of below 10 years while 23.33 per cent of the respondents have a farming experience of above 15 years.Similar finding were reported by**Kakki*et al*.,(2022)**

Annual income:

It was revealed that most of the respondents (49.17 %) were found under medium income group, followed by the 33.33 per cent were under high income group and 17.5 per cent under low income group.Similar finding were reported by**Rai*et al.*,*(*2012)**

Social participation:

Majority (66.67 %) of the respondents were not member of any political,social,rural or cultural organization. Similar finding were reported by**Akter*et al.*,*(*2020)**

Mass media exposure:

The above table 1 shows that 46.67 per cent of the respondents have medium exposure to media and 40.83 per cent have low exposure while the remaining 12.5 per cent of the respondents had high exposure to media as a source of information towards mandarin cultivation.

Extension contact:

Lastly, regarding extension contact was found that 53.33 per cent of the respondents have medium level of contact, 27.5 per cent have low level of contact and about 19.17 per cent of the respondents have high level of contact.Similar finding were reported by**Kakki et al.,(2022) and Saryam*et al* .,(2020)**

Knowledgeofthe respondents towards mandarin Cultivation practices

Table 2: Distribution of the knowledge level of the respondents about mandarin cultivation practices.

(N=120)

S. No.	Statements	Knowledge					
		Fully Known		Partially known		Not Known	
		f	%	*f*	%	*F*	%
1.	Variety (Khasi mandarin)	120	100	0	0	0	0
2.	Soil type(sandy loam)	3	2.5	10	8.33	107	89.17

3.	Soil Testing (NPK status and pH level)	7	5.83	3	2.5	110	91.67
4.	Propagation through seeds	120	100	0	0	0	0
5.	Propagation through budding	9	7.5	40	33.33	71	59.17
6.	Plant Spacing (4.5m x 4.5m)	24	20	87	72.5	9	7.5
7.	Pit size (30cm x 30cm x 30cm)	10	8.33	67	55.83	43	35.84
8.	Planting time (June to August)	120	100	0	0	0	0
9.	Irrigation	6	5	12	10	102	85
10.	FYM	105	87.5	11	9.17	4	3.33
11.	Chemical fertilizer	0	0	9	7.5	111	92.5
12.	Insecticides / Pesticides	0	0	26	21.67	94	78.33
13.	Mulching	112	93.33	7	5.83	1	0.84
14.	Weeding	120	100	0	0	0	0
15.	Intercropping	120	100	0	0	0	0
16.	Application of lime(caco2)	108	90	10	8.33	2	1.67

The table 2indicates that all the respondents (100 %) are aware of the variety (Khasi mandarin) being planted. Majority of the respondents (89.17 %) were not aware about the suitable soil (Sandy loam)for mandarin since most of them were illiterate.About 91.67 per cent of the respondents have no knowledge about soil testing. 100 % of the respondents have full knowledge regarding propagation through seeds, more than half of the respondents (59.17 %) have no knowledge about buddingand the reason behind this is that the success rate is very low since they have limited knowledge in budding. Majority of the respondents (72.5%) were partially correct about the recommended plant spacing (4.5m x 4.5m). About 55.83 per cent of the respondents were partially correct about the pit size (30cm x 30cm x 30cm).It is found that 100 per cent of the respondents have full knowledge regarding the planting time (June-August).Majority of the respondents (85%) were not aware/no knowledge about irrigation for they depend entirely on rain. 87.50 per cent have full knowledge about application of FYM. About 92.5 per cent of the respondents have no knowledge regarding any sorts of chemical fertilizer and 78.33 per cent of the respondents donot have any knowledge about insecticides/pesticidessince the government emphasizes more on organic production and chemical fertilizer/pesticides/insecticides are not easily

available in the state. Around 93.33 per cent have full knowledge about mulching. All the respondents (100 %) have full knowledge about weeding as well as in the case of intercropping for it shows enormous advantages to the farmers over adopting this practices. About 90 per cent of the respondents have full knowledge about application of lime (caco2).

Table 3: Overall knowledge of the respondents towards mandarin cultivation.

S.No	Category	Frequency	Percentage
1	Low (32-35)	27	22.50
2	Medium (36-39)	73	60.83
3	High (40-44)	20	16.67
	Total	120	100.00

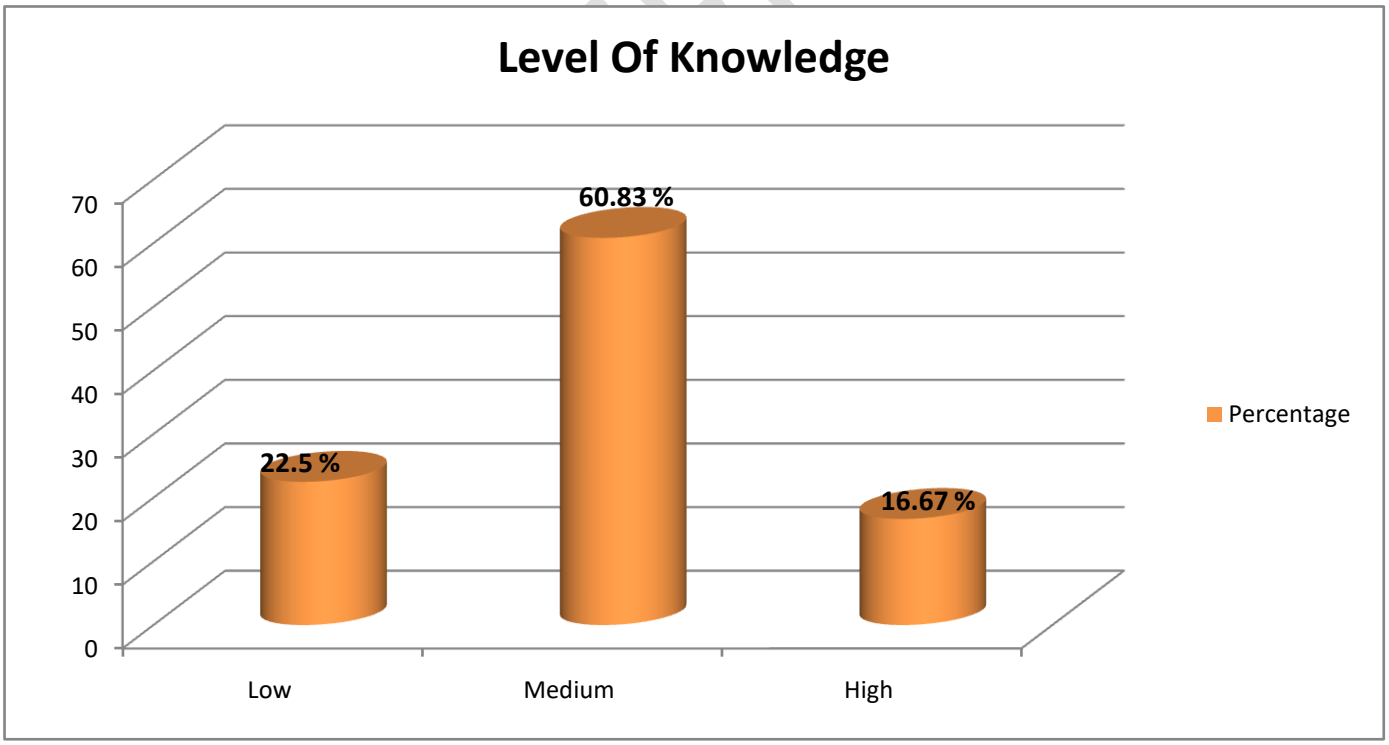

Figure 1: Overall knowledge of the respondents towards mandarin cultivation.

Based on the data in (Table.1) it can be observed in (Table.2) that majority (60.83 %) of the respondents have medium level of knowledge mandarin plantation, 22.5 per cent have low level of knowledge and 16.67 per cent have high level of knowledge about mandarin. Similar findings were founds in **Meena (2004) ,Ingole (2020)** and **Yadav (2006).**

Association between selected independent variables with knowledge of respondents.

Table 4: Association between selected independent variables with knowledge

Sl. No	Variables	Pearson's correlation Coefficient
1	Age	0.015 NS
2	Educational Qualification	0.651**
3	Marital Status	0.159 NS
4	Family size	0.129 NS
5	Occupation	0.185 NS
6	Land holding	0.0458 NS
7	Farming Experience	0.224*
8	Annual Income	0.198 NS
9	Social Participation	0.259*
10	Mass Media Exposure	0.315**
11	Extension Contact	0.694**

The result of correlation analysis in above table 4 revealed that characteristics namely educational qualification, mass media exposure and extension contact were found to have positive and highly significant with adoption at 0.01 per cent level of probability whereas farming experience and social

participation had positively significant with adoption at 0.05 per cent level of probability, hence null hypothesis (Ho) is rejected in this case. The positive significant relationship shows that when the level of the above variables viz. education, farming experience, social participation, mass media exposure, and extension contact increases, than the adoption of the respondents about recommended practices also increases. The variables age, Family Size, Marital status, land holding, annual income and occupation were found to have no relationship with the knowledge of the farmers so these were non-significant hence, null hypothesis (Ho) is accepted in this case. The finding clearly indicates that most of the selected independent variables had positively and significant correlated with the knowledge of the respondents. The findings were partially related with **Kumar *et al*., (2019)**

CONCLUSION

It is concluded that majority of the respondents had medium level of knowledge in mandarin cultivation followed by low and high. The possible reasons for this are that the farmers are not exposed regularly to trainings about mandarin cultivation and also having a low income becomes hard for the farmers to maintain the productivity of the orchard since it requires labour and is time consuming. Subsequently majority of the selected independent variables were positively significant with the knowledge of the farmers.

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