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Knowledge level of mango growers towards improved cultivation practices in Malda district, West Bengal

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Abstract

Mango (*Mangifera indica*) is highly regarded in India, known as the "King of fruits" due to its adaptability, high nutritional value, taste, and popularity. West Bengal, particularly Malda district, is a leading region for mango cultivation. This region grows varieties like Langra, Himsagar, Amrapali, Laxmanbhog, Gopalbhog, and Fazli, with mangoes available from May to August. The study has been done in Malda district of West Bengal. The study has been conducted to measure the extent of knowledge of mango growers towards improved cultivation practices. Based on highest numbers of mango growers in the villages, a total 140 respondents were selected randomly chosen from seven villages within English Bazar block. The data is collected through pre developed scheduled and analysed with proper statistical tools and techniques. The study inferred that most respondents (55.00%) belong to middle age group. A significant number of the respondents have medium level of scientific orientation (45.71%), risk bearing capacity (48.57%) and progressiveness (43.57%). According to the study, the majority of the respondents (57.86%) had a medium level of knowledge about the improved mango cultivation practices. Independent Variables such as age, educational qualification, occupation, family size, social participation, mass media exposure, extension contact, scientific orientation, risk bearing capacity shows a positive and significant correlation with knowledge level.

Keywords: Knowledge, improved mango cultivation practices

Introduction

Mango (*Mangifera indica*) is the most important fruit of India. The mango has become a most important fruit crop of the tropics and sub-tropics, particularly in Asia where it has considered the 'King of fruits' (Mukherjee and Litz, 2009) [7] due to its wide adaptability, high nutritive value, delicious taste, excellent flavour, attractive appearance, and popularity among masses (Kishun *et al.*, 1998) [4]. West Bengal is a progressive state in the field of modern horticulture in the country.

West Bengal is one of the leading state in respect of mango cultivation in India. In terms of area under the crop, the Malda district ranks first in the state followed by Murshidabad and North 24 Pargana. Mango is undoubtedly the best-known product of the district having national and international fame. In the year 2021-2022 the total area under mango production estimated was 32000 ha and the mango production estimated was 3.57 lakh metric ton. A range of delectable table fruit, ranging from the famous langra to the himasagar, amrapali, laxmanbhog, gopalbhog and fazli mango varieties grows in the mangoes grown in the district become available for processing between the months of May and August, starting from early varieties such as the himsagar and laxmanbhog to late varieties such as the gopalbhog. Thus, once an orchard has been planted and has matured, mango cultivation becomes a highly seasonal activity, with the activity period spanning just four months of the year. As the district's economy is largely dependent on production and trading of mango, storage and transportation facility has improved a lot. (District Census Handbook, 2011) [1].

The quality of mango is decreasing over the years due to use of excessive use of chemical fertilizers, treatment of plants with improper dose of chemicals, applying chemical ripening chemical etc. Hence it is imperative to analyse the actual status of mango in cropping system of Malda district. It was also felt necessary to critically analyse the extent of knowledge of improved mango cultivation practices. Knowledge of improved production practices is the key to higher production of fruits and higher incomes to farmers. The technical knowledge of growers appears to be the key link to higher level of adoption. The scientific research being done at the fruit research stations has to be transferred to orchardists through extension education processes including on-farm training, distributing extension literature and regular field visits and demonstrations. Once growers acquire knowledge, they begin to use and apply new techniques and improved practices in their orchards. Even among growers, there is a great variation in their levels of knowledge, as well as their readiness to accept, try new methods and improved production practices. Some need more time to grasp and get convinced and hence need longer sustained support from extension agencies including horticulture department staff.

Research methodology

Descriptive research design was followed for the study as it describes the characters that are being studied. The present study has been conducted in Malda district of West Bengal. Out of 16 blocks in Malda district, English Bazar has been chosen purposively based on the maximum number of mango growers among the all blocks of the district. From selected block, seven villages were selected randomly and from there a total number of 140 respondents were selected through proportionate random sampling method who were involved in mango cultivation.

Objectives of the study

1. To assess the socio-economic profile of the respondents.
2. To determine the extent of knowledge of the respondents towards improved mango cultivation practices

Results and Discussion

Table 1: Socio-economic profile of the respondents

Sl. No.	Independent Variables	Category	Frequency	Percentage
1.	Age	Young Age (Up to 35 years)	20	14.29
		Middle age (36-55 years)	77	55.00
		Old age (Above 55 years)	43	30.71
2.	Education	Illiterate	32	22.85
		Can read and write only	13	9.28
		Primary school	37	26.43
		High school	30	21.43
		Intermediate	20	14.29
		Under Graduate	8	5.72
3.	Occupation	Agriculture+ Mango Grower	48	34.28
		Business+ Mango Grower	57	40.72
		Other + Mango Grower	35	25.00
4.	House type	Hut (Mud House)	22	15.71
		Semi- Cemented	62	44.29
		Cemented	56	40.00
5.	Land holding	Marginal (< 1ha)	3	2.15
		Small (1 ha – 2 ha)	7	5.00
		Medium (2 ha- 4 ha)	50	35.71
		Large (>4 ha)	80	57.14
6.	Annual income	Low (Below 2 lakh)	29	20.71
		Medium (2 lakh- 4 lakh)	55	39.29
		High (More than 4 lakh)	56	40.00
7.	Types of family	Nuclear	103	73.58
		Joint	37	26.42
8.	Size of family	Small (Up to 3 members)	29	20.71
		Medium (4 to 6)	92	65.71
		Large (Above 6)	19	13.58
9.	Social participation	None	119	85.00
		One organization	21	15.00
10.	Extension contact	Low (4-7)	56	40.00
		Medium (8-9)	53	37.86
		High (10-12)	31	22.14
11.	Mass media exposure	Low (12-17)	92	65.71
		Medium (18-23)	47	33.57
		High (24-27)	1	0.72
12.	Scientific orientation	Low (6-10)	21	15.00
		Medium (11-14)	64	45.71
		High (15-18)	55	39.29
13.	Risk bearing capacity	Low (6-10)	18	12.86
		Medium (11-14)	68	48.57
		High (15-18)	54	38.57
14,	Progressiveness	Low (6-10)	20	14.29
		Medium (11-14)	61	43.57
		High (15-18)	59	42.14

From the table no.1, it is evident that a substantial. This data demonstrates that a significant portion, specifically 26.43 per cent of the respondents had attained education up to the primary school level, followed by 21.43 per cent who had completed education up to the high school level. most of respondents (40.72%) reported that their primary source of income was mango cultivation with business. A smaller percentage of respondents (34.28%) reported having agriculture with mango cultivation only, while 25.00 per cent of the participants were engaged in other work alongside mango cultivation. This table shows that most of respondents, specifically 44.29 per cent live in semi-

cemented houses. Furthermore, 15.71 per cent of the respondents reside in huts, while 40.00 per cent of the participants reported living in cemented. With a majority of 57.14 per cent of the respondents fell into the large landholding group followed by 35.71 per cent of the respondents which were found to be categorized as medium farmer. 40 per cent respondents belonged to the high-income group. This group reported annual earnings ranging more than 4 lakhs. It is evident that a significant majority of the respondents, accounting for 73.85 per cent of the total sample, belonged to nuclear family households. Majority of respondents which is 65.71 per cent belong to medium size, followed by small size (20.71%) and large size (13.58%). The results of the study indicate that the majority of respondents (85.00%) does not participate in any social organizations, followed by 15 per cent respondents that are a member of one organization. It is clearly visible that the results of the study indicate that most respondents (40.00%), specifically out of the total 140 respondents, had a low level of extension contact. Majority of respondents, accounting for 65.71 per cent, had a medium level of mass media exposure. The highest percentage of respondents belonged to the medium level of scientific orientation, accounting for 45.71 per cent of the total sample. It is comprising 48.57 per cent of the total respondents, have a medium level of risk-bearing capacity. According to the data presented in the above table, the most of respondents, specifically 43.57 per cent were found to have a medium level of progressiveness. Similar findings were reported by Singh and Singh (2017) [11], Saryam & Jirli (2020) [10] and Kumar *et al.* (2022) [5].

Table 2: Knowledge of the respondents towards improved mango cultivation practices

Sl. No.	Mango production technology	Fully correct	Partially correct	Not correct
		Frequency (Percentage)	Frequency (Percentage)	Frequency (Percentage)
1.	Alluvial/Loamy/laterite soil is suitable for mango cultivation.	33 (23.57%)	70 (50.00%)	37 (26.43%)
2.	Well drained soil is required for mango production.	51 (36.43%)	37 (26.43%)	52 (37.14%)
3.	Proper planting time.	52 (37.14%)	36 (25.71%)	52 (37.14%)
4.	Varieties of mango	84 (60.00%)	18 (12.86%)	38 (27.14%)
5.	Spacing distance required for different planting technique.	35 (25.00%)	60 (42.86%)	45 (32.14%)
6.	Place from where saplings are brought.	37 (26.43%)	58 (41.43%)	45 (32.14%)
7.	Proper treatment in flowering stage	47 (33.57%)	88 (62.86%)	5 (3.57%)
8.	Different grafting techniques	27 (19.29%)	64 (45.71%)	53 (37.86%)
9.	Proper field preparation method	47 (33.57%)	74 (52.86%)	19 (13.57%)
10.	Proper planting techniques	13 (9.29%)	71 (50.71%)	56 (40.00%)
11.	NPK ratio required to plants	64 (45.71%)	28 (20.00%)	48 (34.29%)
12.	Number of doses for fertilizer application	51 (36.43%)	37 (26.43%)	52 (37.14%)
13.	Proper training and pruning techniques	20 (14.29%)	62 (44.29%)	58 (41.43%)
14.	Intercropping and weeding techniques	36 (25.71%)	68 (48.57%)	36 (25.71%)
15.	Application of growth regulators in different stages of flowering, fruiting	27 (19.29%)	75 (53.57%)	38 (27.14%)
16.	Pest through spraying Acephate 75 SP or Phosalone 35 EC or carbaryl 50 WP?	42 (30.00%)	46 (32.86%)	52 (37.14%)
17.	Irrigation method given to plants	50 (35.71%)	27 (19.29%)	63 (45.00%)
18.	Product used to prevent fruit fly	52 (37.14%)	67 (47.86%)	21 (15.00%)
19.	Yield	73 (52.14%)	23 (16.43%)	42 (30.00%)
20.	Post harvest technology	17 (12.14%)	64 (45.71%)	59 (42.14%)

From the table 2, shows that a majority number of respondents which is 57.86 per cent belongs to medium level of knowledge level towards improved mango cultivation practices. 50 per cent of respondents have partial knowledge about soil type required for mango cultivation. 37.14 per cent of respondents are unaware about improved soil drainage system. It shows that 37.14 per cent of respondents have proper knowledge of planting of new plants. A significant number of 60 per cent have full knowledge about improved variety. It shows that 42.86 per cent of respondents have partial knowledge of spacing distance between plants. 41.83 per cent respondents have partial knowledge of the place from where the saplings are brought. It shows that 62.86 per cent of respondents have partial knowledge level about improved technologies of proper treatment in flowering stage. 45.71 per cent of respondents are partial knowledgeable about different grafting techniques. 52.86 per cent respondents are partial knowledgeable about improved field preparation method followed by 33.57 per cent of respondents who have proper knowledge about field preparation. 50.71 per cent of respondents are partial knowledgeable about improved planting techniques followed by 40 per cent of respondents those who are unaware about improved planting techniques. It shows that 45.71 per cent of respondents have proper knowledge about the requirements of NPK fertilizers. 37.14 per cent of respondents are unaware about the improved techniques of fertilizer dosage. 44.29 per cent of respondents have partial knowledge about training and pruning of plants. The improved technologies about intercropping and weeding techniques is partially known to 48.57 per cent of respondents. A majority of respondents (53.57%) have partial knowledge of different growth regulators in different stages. 37.14 per cent of the respondents have no knowledge about the improved pest control techniques. 45 per cent of the respondents does not have knowledge about improved irrigation techniques. 47.86 per cent of respondents have partial knowledge about the prevention of fruit fly. A majority of the respondents (52.14%) have proper knowledge about the yield. 45.71 per dent of the respondents have partial knowledge about the improved post-harvest technology.

Table 3: Distribution of respondents according to their overall knowledge level

Sl. No.	Categories	Frequency	Percentage
1.	Low (27-34)	37	26.43
2.	Medium (35-45)	81	57.86
3.	High (46-53)	22	15.71
Total		140	100.00

Table 3, reveals that 57.86 per cent of the respondents had medium level of knowledge towards improved mango cultivation practices. Considerable percentage of respondents were found having low level 26.43 per cent and high level 15.71 per cent of knowledge respectively.

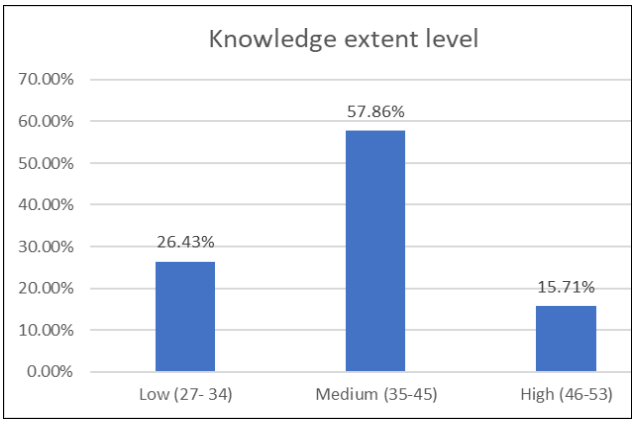

Fig 1: Distribution of respondents according to their overall knowledge towards improved mango cultivation practices

Table 4: Correlation coefficient (r) between different independent variables and knowledge about improved mango cultivation practices

Sl. No.	Independent Variable	Correlation coefficient
1.	Age	0.785 *
2.	Educational qualification	0.999 *
3.	Occupation	0.344**
4.	House type	0.363**
5.	Land holding	0.164^{NS}
6.	Income	0.672*
7.	Family size	0.992*
8.	Social Participation	0.110^{NS}
9.	Mass media exposure	0.250**
10.	Extension Contact	0.613*
11.	Scientific orientation	0.458**
12.	Risk bearing capacity	0.523 *
13.	Progressiveness	0.314 **

*= Correlation is significant at 0.01% probability
**= Correlation is significant at 0.05% of probability

The results from table 4, indicate that several independent variables, including age, educational qualification, occupation, house type, income, family size, social participation, mass media exposure, extension contact, scientific orientation, risk bearing capacity shows a positive and significant correlation with knowledge level. Among the independent variables age, educational qualification, income, family size, extension contact, risk bearing capacity shows positive correlation which is significant at 0.01 per cent probability. Occupation, house type, mass media exposure, scientific orientation, progressiveness shows positive correlation which is significant at 0.05 per cent probability. It shows that there is no significance with land holding and social participation.

Conclusion

It is concluded that most respondents were middle aged group, possessed a higher level of literacy, belonged to nuclear families, resided in semi-cemented houses, significant source of income was mango cultivation along with business, possessed a higher level of literacy and had high level of annual income. A significant number of the respondents have medium level of scientific orientation, risk bearing capacity and progressiveness. The maximum numbers of the respondents have a medium level of knowledge regarding improved mango cultivation practices. Independent Variables such as age, educational qualification, occupation, family size, social participation, mass media exposure, extension contact, scientific orientation, risk bearing capacity shows a positive and significant correlation with knowledge level.

Competing Interest

Authors have declared that no competing interests exist.

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