



## Mango Growers' Preference of Mango Varieties According to Profitability in Murshidabad District

Tanushree Saha<sup>1\*</sup>, Sagar Mondal<sup>2</sup> and Madhurima Maiti<sup>3</sup>

<sup>1,3</sup>Ph.D. Research Scholar, <sup>2</sup>Professor, Department of Agricultural Extension, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia-741252, West Bengal, India

\*Corresponding author email id: tanushreesaha94@rediffmail.com

### ARTICLE INFO

Keywords: Mango varieties, Mango growers, Paired comparison, Preference, Profitability

<http://doi.org/10.48165/IJEE.2022.58411>

### ABSTRACT

Murshidabad district is famous for mango cultivation and presently around two hundred traditional mango varieties are produced. The present study was conducted on eighty mango growers randomly selected from five villages under Farakka block of Murshidabad district in May, 2021. The objective of the study was to identify some important mango varieties grown by mango growers and also to find out the relative preferences of the varieties according to profitability. Five varieties of mango namely, Himsagar, Langra, Amrapali, Fazli and Gopalbhog were identified and presented to the respondent in ten pairs. The respondents were asked to select one variety of mango over the other from each pair separately which they consider more profitable. For analysis of data, the method of pair comparisons was followed. According to the perception of the mango growers the most profitable mango variety was Langra followed by Himsagar. Fazli was more profitable than Amrapali but Gopalbhog was least profitable as perceived by the mango growers.

### INTRODUCTION

Mango is one of the most popular fruits grown in India. At present, mango produced over 2.3 million hectares with production of 21.01 million metric tonnes per year in the country. Among the major fruits of India, mango is known as “King of fruits” as well as “National fruit of India” (Saadat & Gupta, 2017). It is a unique fruit that demonstrates the great quality and plenty of nutrients it contains. A mango can meet up to 40 per cent of the daily dietary fibre requirements (Divya & Arunachalam, 2020). Mango is very popular because of its broad extent of adoptability, higher nutritive value and richness in variety, delightful taste and exceptional flavour. Mangoes, both raw and ripe, are used to make a variety of foods such as dried mango pulp, pickle, jam, chutney and other food items (Saha & Bhowmik, 2021). Mango has also medicinal property. In India, mangoes are commercially cultivated in Andhra Pradesh, Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Odisha, Tamil Nadu, Uttar Pradesh and West Bengal. Mango

productions are a vital component of our economy. It helps in increasing food supply, generate job opportunity and earning foreign exchanges (Khagra et al., 2021). The entrepreneurial characteristics of the mango farmers may be improved with training, exposure visit and educational programmes and also by involving them in various development programme regarding entrepreneurial activities to enhance their social- economic status in the rural area (Manivannan & Natarajan, 2020).

In the context of horticultural production in India, West Bengal stands at eighth position and is a progressive state which occupies prominent place in mango cultivation. Mango is grown all over the district of Malda, Murshidabad, Nadia and North 24 Paraganas (Halder, 2020). Besides it is also grown in many other districts like Hoogly, Burdwan, Jalpaiguri and Coochbehar. Murshidabad is a traditional horticulture belt. This district is famous for mango cultivation due to its soil and climatic condition and presently around 200 traditional varieties are produced (Majumder et al., 2016). The specialty of Murshidabadi mango is

that these saplings are crossbred with flower and fruits. Each variety having its own distinct flavour and aroma is very delicate with very little fibre. But the mango farmers of Murshidabad district usually not getting remunerative market price of traditional varieties. Among these, Himsagar, Fazli, Langra, Amrapali, Gopalbhog, are few of the popular varieties grown extensively in Murshidabad district. The objectives of the present study were to find out the most important mango varieties cultivated by the mango growers in Murshidabad district and to find the relative preferences of mango varieties according to profitability as perceived by the growers.

### METHODOLOGY

The study was carried out at Farakka block in Murshidabad district of West Bengal. Purposive as well as simple random sampling methods were followed. The district, block and the villages were purposively chosen. Under the Farakka block, five villages namely Alaipur, Arjunpur, Beniagram, Ballalpur and Bewa were selected. A total of eighty respondents (viz. 16 respondents from Alaipur, 20 from Arjunpur, 21 from Beniagram, 15 from Ballalpur and 8 respondents from Bewa) were selected by random sampling method. The data were collected in the month of May 2021 by personal interview method with the help of interview schedule. After discussion with Assistant Director of Agriculture, five mango varieties namely; Himsagar, Langra, Amrapali, Fazli and Gopalbhog were identified in order to find out the preferences of mango growers relating to profitability.

In order to identify the hierarchy of mango varieties relating to profitability, the method of paired comparisons (Edward, 1969) was followed. In the method of paired comparison, the F-matrix,

P-matrix, rearranged P-matrix and Z-matrix were calculated. The five varieties of mango were presented to the mango growers in 10 pairs, in maximum possible combinations. The mango growers were asked to select one variety over the other from each pair separately on the basis of profitability. The frequency in the F-matrix table depicts that number of times each variety is judged more profitable than the other variety by the total number of respondents.

The P-matrix provides the proportion of times the varieties in the column is judged more profitable than the variety of the row. This is acquired by dividing the data of each cell in the F-matrix by the entire number of respondents. The rearranged P-matrix is then made with a variety having the smallest column sum at the left and that with the highest at the right. The Z-matrix represents the normal deviation corresponding to the proportion in the P-matrix table. This is found in the table of normal deviates (Edwards, 1969).

### RESULTS AND DISCUSSION

The relative importance of five mango varieties according to profitability was found out based on the responses of 80 mango growers of the five villages. The hierarchy of mango varieties relating to profitability provided a clear picture of relative importance of mango varieties for development of horticultural enterprise in Murshidabad district.

A perusal of Table 4 and figure revealed that Langra was the most profitable mango variety which ranked first followed by Himsagar, Fazli, Amrapali and Gopalbhog respectively. So, Langra was the most lucrative variety as it fetched good market price and best variety for canning and preservation purpose. English

**Table 1.** F-matrix of five mango varieties judged by the eighty respondents according to profitability

Varieties	Himsagar (A)	Langra (B)	Amrapali (C)	Fazli (D)	Gopalbhog (E)
Himsagar (A)	–	58	29	34	15
Langra (B)	22	–	27	26	6
Amrapali (C)	51	53	–	50	22
Fazli (D)	46	54	30	–	12
Gopalbhog (E)	65	74	58	68	–

**Table 2.** P-matrix corresponding to F-matrix

Varieties	Himsagar (A)	Langra (B)	Amrapali (C)	Fazli (D)	Gopalbhog (E)
Himsagar (A)	0.500	0.725	0.362	0.425	0.187
Langra (B)	0.275	0.500	0.337	0.325	0.075
Amrapali (C)	0.637	0.646	0.500	0.625	0.275
Fazli (D)	0.575	0.675	0.375	0.500	0.150
Gopalbhog (E)	0.812	0.925	0.725	0.850	0.500
Sum	2.799	3.471	2.299	2.725	1.187

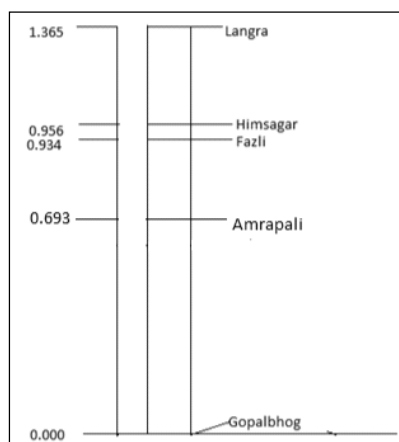
**Table 3.** Rearranged P-matrix- smallest to highest column sum

Varieties	Gopalbhog (E)	Amrapali (C)	Fazli (D)	Himsagar (A)	Langra (B)
Gopalbhog (E)	0.500	0.725	0.850	0.812	0.925
Amrapali (C)	0.275	0.500	0.625	0.637	0.646
Fazli (D)	0.150	0.375	0.500	0.575	0.675
Himsagar (A)	0.187	0.362	0.425	0.500	0.725
Langra (B)	0.075	0.337	0.325	0.275	0.500
Sum	1.187	2.299	2.725	2.799	3.471

**Table 4.** Z-matrix -Hierarchy of five mango varieties according to profitability

Varieties	Gopalbhog (E)	Amrapali (C)	Fazli (D)	Himsagar (A)	Langra (B)
Gopalbhog (E)	0.000	0.598	1.036	0.885	1.440
Amrapali (C)	-0.598	0.000	0.319	0.350	0.375
Fazli (D)	-1.036	-0.319	0.000	0.189	0.454
Himsagar (A)	-0.889	-0.353	-0.189	0.000	0.598
Langra (B)	-1.440	-0.421	-0.454	-0.598	0.000
Sum Z	-3.963	-0.495	0.712	0.826	2.867
Mean Z	-0.792	-0.099	0.142	0.165	0.573
Add largest negative deviation	+0.792	+0.792	+0.792	+0.792	+0.792
Rank* (scale value) R	0.0005 <sup>th</sup>	0.6934 <sup>th</sup>	0.9343 <sup>rd</sup>	0.9562 <sup>nd</sup>	1.3651 <sup>st</sup>

\*Rank after adding largest negative deviation (+0.792)



translation of the Hindi word Langra is “lame”. It is thought that Banaras (now Varanasi) was where Langra Aam first appeared. This mango variety is found to be fibreless, yellowish brown, rich pulp, incredibly juicy and having a strong smell when it ripened. Its size varies from medium to large. This pulpy fruit are very sugary. It was also available in the market up to the month of August, the end season of mango in the market; for this reason, it was most profitable variety in Murshidabad district.

Among the five mango varieties, Himsagar occupied second position in terms of profitability. The preference of mango growers with respect to Himsagar was compatible for its good taste, having yellow to orange flesh with less fibre. In Murshidabad district, locally it is also known as ‘Khirsapati’. Though this mango is abundant in the Malda district, especially along the banks of the Mahanadi and Kalindi rivers, it is also found in Murshidabad dotted with old and new orchards. There were numerous zamindar gardens spread across hundreds of acres of land that were started in the early 1700s and continue to produce great quality mangoes. The Geographical Indication Tag (GI) for the “pride of Bengal” was given in 2008 for this mango varieties. This was the significant cause of getting the rank. But these findings were contradictory to the findings of the study conducted by Sampa et al., (2019) as according to them, Himsagar was more profitable mango variety than Langra.

Fazli stood third position according to profitability. The scale values on profitability of Himsagar and Fazli were 0.956 and 0.934 respectively and a perusal of the figure revealed that there was a marginal difference in the scale value. It may be concluded

that both Himsagar and Fazli were more or less equally profitable. Fazal Bibi of the village of Arapur is the source of the name Fazli, also known as Fazli Babu. The fruit has a lovely pale-yellow colour, a juicy yet firm flesh, and a delightful aroma. It also tastes sweet having less fibre. The largest and heaviest mangoes in this mango’s family range in weight from 700 to 1500 g. The Geographical Indication Tag (GI) for this enormously well-liked mango was awarded in 2008. Similarly, Amrapali scale value was 0.693 but Gopalbhog occupied fifth rank by the mango growers with respect to profitability. Its scale value brought down to arbitrary zero as per rule of interval level of measurement. It did not indicate that Gopalbhog was not profitable and since its scale value brought down to arbitrary zero, it occupied fifth position and this mango variety was also profitable but it was least profitable among the five mango varieties grown in Murshidabad district of West Bengal. Amrapali was created as a cross between “Dasheri” and “Neelum.” In Chakdaha, Nadia district, West Bengal, this hybrid mango was originally planted. The flesh inside was a rich orange-red tint. It was still unknown when, where and by whom the variety of Gopalbhog mangoes was invented. However, it can be assumed that this variety may have originated from the famous mango orchards of the Nawabs in Murshidabad. The Gopalbhog mango started to mature from the middle of May. Since May 20, more quantities had been coming to the market. The mango did not stay in the market for very long after ripening. In less than a month, they were no longer available. So, this mango varieties were less preferable to mango growers. These findings were similar in line with Sampa et al., (2019) as Fazli, Amrapali and Gopalbhog mango varieties were ranked respectively.

According to Saripalle Madhuri (2019), due to lack of profitability, marketing opportunities were one of the key problems faced by the mango farmers while technology and information distribution platforms such as e-choupals had to build, to facilitate the development of traditional crops like mango. Farmers had become more attentive for business prospects for getting profit maximization (Goyal, 2010). According to Sarkar et al., (2022), in terms of profitability, employment had an advantage, but it had some constraints also like, lack of market knowledge, lack of proper transportation, absence of exact sense of waste management and safety and hygiene (Gebre et al., 2020). According to Roy et al., (2022), to safeguard the region’s mangoes, good marketing channels and cold storage facilities for delayed marketing were required. As agriculture played a vital role in Indian economy, it

was of utmost importance to analyse the agricultural production and marketing system properly and try to resolve its problems (Sarkar et al., 2018). The characters can be considered important for finding out the quality superiority of this nutritive fruit and for the value chain managers in the farmer-consumer chain for branding (Sardar et al., 2019).

### CONCLUSION

It is found that Langra and Himsagar are the most lucrative mango varieties preferred by the mango growers. Since mango enterprise is an important sector of Indian economy, the Department of Horticulture may take necessary initiatives for dissemination of modern technology for marketing of Langra and Himsagar variety in international market for earning foreign exchange. The price and the profit are highly dependent on the market situation. Similarly for maintaining proper quality and taste, proper cultivation procedure as well as grading of mangoes must be known to the mango growers.

### REFERENCES

- Divya, G., & Arunachalam, R. (2020). A study on adoption level of mango growers on the recommended technologies in Krishnagiri district of Tamil Nadu. *Madras Agricultural Students Union*, 107(1-3), 97-102.
- Edwards A. L. (1969). *Techniques of attitude scale concentration*. Vakils, Feffer and Simons Private Limited, Mumbai.
- Gebre, G. G., Rik, E., & Kijne, A. (2020). Analysis of banana value chain in Ethiopia: Approaches to sustainable value chain development. *Cogent Food & Agriculture*, 6(1), 1742516.
- Goyal, A. (2010). Information, direct access to farmers and rural market performance in Central India. *Applied Economics*, 2(3), 22-45.
- Halder, S. (2020). Potentiality of some traditional mango cultivars of West Bengal. *The Bioscan*, 115(4), 415-418.
- Kharga, B. D., Saha, A., Pradhan, K., & Roy, R. (2021). Focusing the relationship of net profit with the determinant attributes of rural entrepreneurs, *Indian Journal of Extension Education*, 57(2), 135-138.
- Kumar, M., Ponnuswami, V., Jeyakumar, P., Richard Kennedy, R., & Saraswathy, S. (2013). Studies on influence of season for biochemical parameters in mango cultivars. *African Journal of Agricultural Research*, 8(49), 6394-6400.
- Kundu, S., Sanyal, N., & Dutta, P. (2009). Studies on potentiality of some mango varieties in West Bengal. *Journal of Crop and Weed*, 5(2), 68-71.
- Majumder, M., Sarkar, K., & Ray, S. K. (2016). Comparative study on income generation through horticulture crops like mango, litchi with sericulture at farmers' level in Murshidabad district, West Bengal. *Journal of Environment and Socio-biology*, 13(2), 223-232.
- Manivannan, N., & Natarajan, M. (2020). The effect of entrepreneurial performance among the mango growers in Salem district of Tamil Nadu. *Indian Journal of Extension Education*, 56(1), 73-77.
- Roy, R., Das, S., Sarkar, V., Das, B., Mondal, A., Rudra, B., Bhowmik, P., & Majumder, D. (2021). Marketing of mango: perceived constraints during normality and due to lockdown in West Bengal. *Indian Journal of Extension Education*, 58(1), 176-179.
- Saadat, M. N., & Gupta, K. (2017). Mango cultivation in Malda district, West Bengal: historical perspective. *Asian Agri-History*, 21(4), 309-318.
- Saha, R., & Bhowmik, G. (2021). Mango cultivation in Murshidabad district of West Bengal: problems and prospects. *IOSR Journal of Agriculture and Veterinary Science*, 14(1), 31-41.
- Sampa, A. Y., Alam, M. A., Latif, M. A., & Islam, M. M. (2019). Socio-economic status and rationale of mango cultivation based on some selected areas in Rajshahi district of Bangladesh. *Research in Agriculture, Livestock and Fishery*, 6(1), 79- 90.
- Sanyal, D., Roy Choudhury, R., Dhua, R. S., & Mitra, S. K. (1991). Study of some mango cultivars of West Bengal. *Indian Food Packer*, 45(2), 29-33.
- Sardar, A. S., Modak, S., Das, L., Pal, P. K., Nain, M. S., Panda, S., & Mondal, S. (2019). Characterisation for quality assessment of jackfruit (*Artocarpus heterophyllus* L.) in Terai districts of West Bengal. *Indian Journal of Agricultural Sciences*, 89(3), 433-438.
- Saripalle M. (2019). *Market awareness and profitability: case study of Mango production in Karnataka, India. Economic and Political Weekly*, 54(4), 52-59.
- Sarkar, B., Basu, D., Jana, H., & Haque, M. (2022). Profitability analysis and stakeholders' perception of banana value chain in Nadia district of West Bengal. *Indian Journal of Extension Education*, 58(2), 124-128.
- Sarkar, B., Mondal, S., & Basu, D. (2018). Problems and prospects of mango growers of Nadia district of West Bengal. *Journal of Agricultural Engineering and Food Technology*, 5(2), 97-103.
- Yadav, A. S., & Pandey, D. C. (2016). Geographical perspectives of mango production in India. *Imperial Journal of Interdisciplinary Research*, 2(4): 257-265.