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# Problems perceived by the Farmers in acquisition of improved *papaya* production technology in Muzaffarpur District of Bihar

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**Abstract**
In the years 2020–21, research was carried out in the Bihar district of Muzaffarpur to find out the farmers face challenges particularly those who cultivate *papaya*s, experienced in obtaining better technology for producing the fruit. As we all know that the state of Bihar divided into four Agro climatic zones based on soils, climate, topography, vegetation, temperature, rainfall, crops etc. The Muzaffarpur district falls under Agro-climatic zone- I, situated in Northern west portion of the state. The soil type of this agro-climatic zone as well as mentioned district is medium acidic, heavy textured and sandy loam which is favourable for *Papaya* production. For this reason, the present researcher choosen this district for the study. For the current research study only one block named Sakra among the 16 blocks was purposefully chosen based on the largest area used for *papaya* growing and the greatest number of *papaya* growers. Based on greater area coverage, six villages called as Gauri har Khalik Nagar, Sarmastpur, Ghanipur, Bejha, Majhaulia, and Katesar. were arbitrarily chosen and given consideration for the study. With assistance from DHO, Muzaffarpur, a list of *papaya* farmers in each of the chosen villages was developed. From every village that was chosen, twenty *papaya* farmers were identified. As a result, the study's sample consisted of 120 *papaya* producers overall. The majority of farmers (87.50%) are unaware of how to determine fertilizer, around 72.50 percent of the *papaya* crop was harvested by others, and they faced several different problems that have been addressed in this study. The improved *papaya* production technology required to be adopted by the *papaya* producers, thus extension specialists should undertake numerous demonstrations and field visits.

**Keywords:** *Papaya* production, Improved production technology

## Introduction
A sizable portion of India's overall agricultural output comes from horticulture, a professional field of agriculture (Sankaran 2021) [6]. If the current resources are fully used, horticultural crops especially fruits have a significant export potential and may generate significant amounts of foreign cash (Yadav 2010) [8]. Horticulture has received more attention in recent years as a means of developing waste areas that are unsuitable for the profitable production of field crops. The *papaya* (*Carica papaya*) fruit is highly prized by farmers in general because it yields higher money per hectare, takes less space per plant, and fruits within a year of being planted. *Papaya*'s widespread distribution demonstrates the fruit's significance to agriculture and the global economy. People in tropical and subtropical regions have long recognized it and grown it in their own gardens (Chauhan 2013) [3], since it yields rapid returns and can adapt to a variety of soil types and climates. In many tropical nations, it has moved from being a crop grown in backyard gardens to commercial orchards. It produces one among the most fruits per hectare. With an annual production of over 4.958 million tons and an area covered by 0.118 million acres, India is the global leader in *papaya* production. Brazil, Mexico, Nigeria, Indonesia, China, Peru, Thailand, and the Philippines are among the other leading producers. Gujarat is the nation's leading producer of *papaya*s, with 1.17 million tons produced on 19130 hectares. The second is Andhra Pradesh, which produces around 0.668 million tons in an area of 8790 hectares. In terms of *papaya* output, Bihar ranks thirteenth with around 0.044 million tons produced over 2000 hectares. *Papaya* is mostly grown in the districts of Vaishali, Samastipur, Begusarai, Patna, and Muzaffarpur in Bihar. In Bihar, the average *papaya* yield is lower than the national average.

Area and production have both gone up, but productivity growth has not been all that noteworthy. The availability of high-quality seed and seedlings was one of the many issues that farmers faced when cultivating *papaya*s (Assefa 2015) [1]. Other issues included pollination issues brought on by single-sex plants, lower fruit shelf life, fruit marketing, and a lack of prior knowledge about *papaya* production, which led to poor plantations and decreased economic term (Gaikar 2014) [4] if *papaya* farmers use the suggested producing techniques. Poor producers' socioeconomic circumstances and lack of newer technologies might be the cause of the *papaya*'s low average yield (Banerjee 2010) [2]. There are currently few research studies in the field of knowledge and acceptance level finding of enhanced *papaya* production technique among producers across the nation, and just one such study can be found in Bihar. However, the Bihar district of Muzaffarpur lacks such research. Our training programmes ought to put more of an emphasis on introducing new technologies to farmers outside of the walls of labs and research facilities and on making them goal-oriented. Further improvements are required to increase its profitability (Kumar 2021) [5], but *papaya* producers still face a number of challenges related to production andmarketing.

## Methodology

Out of the 16 blocks that make up the Muzaffarpur district, only one, Sakra, was specifically chosen based on having the greatest area dedicated to *papaya* growing as well as the greatest number of *papaya* growers. With cooperation from DHO, Muzaffarpur, a list of villages that cultivate *papaya* was created. Due to their greater area coverage, only six villages- Gauri har Khalik nagar, Sarmastpur, Ghanipur, Bejha, Majhaulia, and Katesar were chosen at random and given consideration for the research. With input from DHO, Muzaffarpur, a list of *papaya* farmers in each of the chosen villages was developed. From every village that was chosen, twenty *papaya* farmers were picked up. The study's sample consisted of 120 *papaya* producers overall. Using this practical experience, a thorough literature analysis, and conversations with academics and professionals in the field, the researcher chose two dependent variables and twelve independent factors for this study. Tables are used to show the primary data that was gathered using the interview schedule. The percentages in the tables are examined to create analytical research and facilitate the comparison of various data types. Interviews were conducted in order to gather data. We got in touch with the responders at their homes or farms. The respondents' recorded answers were scored in order to be tabulated, and the relevant statistical methods were used for the study.

## Results and Discussions

**Table 1:** Distribution of *papaya* growers according to the problems faced by the farmer (n=120*)

| S. No. | Problems experienced by the *papaya* growers | Frequency | Percentage | Rank |
|---|---|---|---|---|
| 1 | Do not know fertilizer calculation | 105 | 87.50 | 1 |
| 2 | Appearance of different types of diseases. | 96 | 80.00 | 2 |
| 3 | *Papaya* fruits are harvested by other people | 87 | 72.50 | 3 |
| 4 | Wet climate with heavy rainfall tends to reduce the sweetness | 82 | 68.33 | 4 |
| 5 | *Papaya* is very much susceptible to frost during winter | 74 | 61.67 | 5 |
| 6 | Intercultural operations became difficult due to continuous rainfall. | 67 | 55.83 | 6 |
| 7 | Predominance of backyard cultivation | 59 | 49.17 | 7 |
| 8 | Faulty planting system | 48 | 40.00 | 8 |
| 9 | Non-availability of *papaya* experts/consultants within the districts | 34 | 28.33 | 9 |
| 10 | Lack of training Programme related with improved *papaya* production technology | 32 | 26.33 | 10 |
| 11 | Non-availability of labours at the critical times | 27 | 22.50 | 11 |
| 12 | Lack of visit by agricultural personnel | 23 | 19.17 | 12 |
| 13 | Lack of technical knowledge with respect to use of pesticides | 16 | 13.33 | 13 |
| 14 | *Papaya* cultivation requires proper male and female ratio. | 08 | 06.67 | 14 |
| 15 | Lack of storage facilities | 04 | 03.33 | 15 |

* - Multiple responses recorded

The above table shows that a higher percentage of *papaya* growers identified their main challenges as not knowing how to calculate fertiliser (87.50%), the emergence of various diseases (80.00%), the fact that *papaya* fruits are harvested by others (72.50%), the wet climate with heavy rainfall that tends to reduce the sweetness (68.33%), the fact that *papaya* is highly susceptible to frost during the winter (61.67%), the fact that backyard cultivation predominates (49.17%), the use of faulty planting systems (40.00%), the lack of *papaya* experts/consultants within the districts (28.33%), the absence of training programmes related to improved technology for *papaya* production (26.33%), the lack of storage facilities (22.50%), and the absence of agricultural personnel (19.17%), Lack of technical expertise on the use of pesticides (13.33%), improper male to female ratios in *papaya* agriculture (06.67%), and labour shortages during key periods(03.33%).

## Conclusion

A higher percentage of *papaya* growers identified their main issues as not knowing how to calculate fertiliser (87.50%), observing various diseases (80.00%), having other people harvest their fruits (72.50%), the wet climate and heavy rainfall which tends to reduce the sweetness (68.33%), the high risk of frost during the winter (61.67%), the difficulty of intercultural operations due to continuous rainfall (55.83%), the prevalence of backyard cultivation (49.17%), flawed planting systems (40.00%), the lack of *papaya* experts/consultants within the districts (28.33%), the absence of training programmes related to improved technology for *papaya* production (26.33%), the lack of storage facilities (22.50%), the absence of agricultural personnel (19.17%), Lack of technical expertise on the use of pesticides (13.33%), inappropriate male to female ratios in *papaya* agriculture (06.67%), and labour shortages during key periods (03.33%).

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