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# Constraints faced by dragon fruit growers in the production and marketing of dragon fruit in Latur district of Maharashtra

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**Abstract**
Dragon fruit cultivation is gaining momentum among farmers in Latur district Maharashtra, due to its high market value and potential for diversification. However, farmers face multiple constraints throughout the production and marketing stages. This study identifies and analyzes these challenges using data collected from 60 dragon fruit growers. The results shows that high establishment costs, limited irrigation knowledge and labour shortages are major production related constraints. On the marketing side price fluctuations, market saturation and seasonal demand emerge as key issues. Farmers have proposed solutions such as subsidies, training, cooperative marketing and better irrigation practices. The study provides a practical perspective on the difficulties faced by dragon fruit growers and highlights areas that need support to ensure sustainability and profitability.

**Keywords:** Dragon fruit, constraints, production, marketing, farmer suggestions

## Introduction
Dragon fruit is a high value crop with promising returns especially in semi-arid regions like Latur. However, the crop's success depends not only on its market appeal but also on efficient production and reliable marketing systems. Farmers in the region have started investing in dragon fruit cultivation but they continue to face several obstacles that hinder productivity and profitability. These constraints can be technical, financial or operational and they directly impact the sustainability of dragon fruit as a commercial crop. This study focuses on understanding these issues from the farmer's perspective with the objective of identifying the key production and marketing constraints they face and capturing their suggestions for improvement.

## Materials and Methods
This study focuses on the economic aspects of growing and marketing dragon fruit in the Latur district of Maharashtra and was conducted during the year 2024-2025. The methodology outlines the structured approach used to achieve the objectives of the study including a clear description of the study area, sampling procedure, data collection methods and the analytical tools used.

Latur district was chosen as the study area due to its increasing interest and adoption of dragon fruit cultivation. The study covered all ten talukas of the district: Ahmadpur, Ausa, Chakur, Deoni, Jalkot, Latur, Nilanga, Renapur, Shirur Anantpal and Udgir. A total of 60 dragon fruit growers were selected from these talukas to ensure representation across the region. The focus was specifically on farmers whose orchards were in the fruit bearing stage as they were actively involved in both cultivation and marketing activities. A multistage simple random sampling method was adopted. In the first stage, Maharashtra was selected as it is one of India's leading states in dragon fruit cultivation. At the second stage, Latur district was chosen for its notable area under dragon fruit farming. In the final stage, 60 farmers were randomly selected from with the assistance of local agricultural officers. Farmers who were still in the initial planting stages were excluded to maintain the relevance of the data to real world production and marketing

practices. Both primary and secondary data were used in the study. Primary data were collected through personal interviews using pre tested schedules. These interviews focused on the costs of cultivation, production challenges, marketing experiences and the suggestions provided by the farmers. Additional primary data were collected from market intermediaries and local traders. Secondary data such as area under cultivation, total production and general market trends were sourced from government reports, local agricultural offices and relevant publications. To assess the constraints faced by farmers in production and marketing the frequency and percentage method was employed. Each identified constraint was listed and the number of farmers reporting it was recorded. The percentage was then calculated using the formula**:**

Percentage (%) = (Number of farmers reporting the constraint / Total number of respondents) × 100

This method allowed the study to highlight the most significant problems based on how commonly they were experienced by farmers. The analysis provided a clear ranking of constraints reflecting real-world challenges in a measurable and practical way.

## Results and Discussion

### a) Production Constraints faced by dragon fruit growers

The constraints depicted in Table 1 revealed that the responses of 60 dragon fruit farmers in Latur district amongst them the biggest hurdle they face is the high cost of setting up the orchard. Around (77%) of farmers pointed this out saying that expenses like support structures, installing drip systems and buying quality planting materials are quite heavy especially for small and medium farmers. Another major issue, mentioned by about (68%) of growers was a lack of proper knowledge about how to manage irrigation during summer. Since dragon fruit is sensitive to heat and needs controlled watering, many farmers struggle with this due to limited guidance or training. Close to (63%) of farmers also said that planting material is too expensive and sometimes not even available in their area. Labour shortages were also a common concern especially skilled workers which 58% of farmers said affects daily work like pruning and maintenance. When it comes to harvesting more than half (52%) reported difficulties in picking and handling the fruit. Around (47%) felt that they lacked clear knowledge about how to care for their orchard in the long run, like what fertilizers to use, how to prune or manage pests over time. Lastly over a third of the farmers shared that there are no proper packaging standards which leads to damage after harvest and during transport. (Tandel *et. al* 2017) [6]

### b) Marketing Constraints faced by dragon fruit growers

The dragon fruit growers were asked to state the difficulties they experienced in marketing their produce. A total of six major constraints were identified by the respondents, as presented in Table 2. The top constraint was price fluctuation mentioned by over (83%) of the farmers. Since prices rise and fall unpredictably depending on the season and supply it becomes hard for farmers to plan their income. About (72%) also pointed to market saturation meaning that during the harvest season there is so much fruit in the market that prices drop quickly. Linked to this, around (62%) said demand is seasonal. Packaging costs were another burden with (48%) saying they have to spend more to ensure the fruit stays fresh and protected. Over (41%) noted that most consumers don't know about the health benefits of dragon fruit so awareness is low. Finally, (37%) reported that middlemen or agents take high commissions reducing the profits that actually reach the farmer. (Deshmukh *et. al* 2021) [3].

### c) Suggestions to overcome production constraints faced by dragon fruit growers

It could be noted from Table 3 that to overcome the production related constraints in dragon fruit cultivation, a majority of growers (58%) suggested that the government should promote subsidies and provide low-interest loans to reduce the financial burden of orchard establishment. This was followed by (53%) of respondents who emphasized the need for better drip irrigation management and plant protection measures during the summer, including the use of Kaolin and Silicon sprays to combat heat stress. Further, (48%) of the farmers recommended that the government should support on-farm propagation and provide training, ensuring timely access to quality planting material. About (43%) of growers advocated for vocational training programs focused on improved harvesting techniques, while (38%) suggested the development and adoption of semi-mechanized harvesting methods to reduce labour dependency. Additionally, (32%) of farmers felt that regular farmer field schools and expert guidance would help in improving technical know-how related to long-term maintenance. A smaller share (22%) highlighted the need to promote standardized packaging practices, which could help reduce post-harvest losses and improve market value.

### d) Suggestions of dragon fruit growers to overcome the constraints faced in the marketing of dragon fruit

Suggestions for improving the marketing of dragon fruit were gathered from the respondents, and their frequency and percentage are presented in Table 4. The suggestions revealed that a majority of the growers (68%) recommended the development of price stabilization mechanisms through farmer co-operatives and contract farming, to reduce income uncertainty caused by market fluctuations. This was followed by (63%) of respondents who emphasized the need for value addition and product diversification, which could help tap into new markets and improve profitability. A total of (36%) of farmers suggested the use of bulk packaging and reusable materials to lower per-unit packaging costs and enhance transportation efficiency. Additionally, (33%) of respondents recommended promoting dragon fruit through nutritional and health awareness campaigns via social media to increase consumer demand and expand market reach.

Furthermore, (31%) of farmers suggested the promotion of processed dragon fruit products such as juices, dried fruit and other derivatives to improve shelf life and market value. These findings highlight the importance of integrating farmer led suggestions into agricultural marketing strategies and underline the need for support from extension agencies and marketing departments to ensure sustainable and profitable marketing systems for dragon fruit.

**Table 1:** Constraints in the production of Dragon fruit in Latur district.

| Sr. No. | Constraints | Frequency (n=60) | Per cent | Rank |
|---|---|---|---|---|
| 1 | High cost of establishment | 46 | 76.67 | I |
| 2 | Inadequate awareness regarding the controlled irrigation in summer | 41 | 68.33 | II |
| 3 | High cost of planting material | 38 | 63.33 | III |
| 4 | Skilled labour shortages | 35 | 58.33 | IV |
| 5 | Harvesting Difficulties | 31 | 51.67 | V |
| 6 | Lack of Knowledge for long term maintenance | 28 | 46.66 | VI |
| 7 | Packaging practices have not been standardized | 22 | 36.67 | VII |

**Table 2:** Constraints in the marketing of Dragon fruit in Latur district.

| Sr. No. | Constraints | Frequency (n=60) | Per cent | Rank |
|---|---|---|---|---|
| 1 | Price fluctuation | 50 | 83.33 | I |
| 2 | Market Saturation | 43 | 71.67 | II |
| 3 | Seasonal demand | 37 | 61.67 | III |
| 4 | Higher Packaging Cost | 29 | 48.34 | IV |
| 5 | Lack of consumer awareness | 25 | 41.66 | V |
| 6 | High commission charges | 22 | 36.67 | VI |

**Table 3:** Suggestion to overcome production constraints of Dragon fruit in Latur District

| Sr. No. | Suggestions | Frequency (n=60) | Per cent | Rank |
|---|---|---|---|---|
| 1 | Promote government subsidies and low-interest loans for initial setup | 35 | 58.33 | I |
| 2 | Better drip management & plant protection measures during summer | 32 | 53.33 | II |
| 3 | Seek supports from govt & maintain on farm propagation training | 29 | 48.39 | III |
| 4 | Provide vocational training to get better harvesting | 26 | 43.33 | IV |
| 5 | Develop and adopt semi-mechanized harvesting techniques | 23 | 38.34 | V |
| 6 | Organize regular farmer field schools and expert guidance | 19 | 31.67 | VI |
| 7 | Promote specific standard packaging | 13 | 21.66 | VII |

**Table 4:** Suggestion to overcome constraints in marketing of Dragon fruit in Latur District

| Sr. No | Suggestions | Frequency (n=60) | Per cent | Rank |
|---|---|---|---|---|
| 1 | Develop price stabilization through farmer co-operatives and contract farming. | 41 | 68.33 | I |
| 2 | opportunities and value-added product diversification. | 38 | 63.33 | II |
| 3 | Promote processed dragon fruit products. | 19 | 31.67 | III |
| 4 | Encourage bulk packaging and reusable materials to reduce per-unit costs. | 22 | 36.66 | IV |
| 5 | Promote dragon fruit through nutritional and health benefits through social media. | 20 | 33.33 | V |
| 6 | Support direct selling by farmers through FPCs or online platforms to avoid middlemen and reduce commission costs. | 16 | 26.66 | VI |

## Conclusion

The study highlighted the major production and marketing constraints faced by dragon fruit growers in the Latur district of Maharashtra. On the production side the most pressing issues included the high cost of orchard establishment, lack of technical knowledge regarding irrigation management during summer, and the high price and unavailability of quality planting material. Labour shortages and difficulties in harvesting were also identified as significant obstacles. In terms of marketing, price fluctuations, market saturation during the peak season, and low consumer awareness emerged as the primary concerns. Packaging costs and high commission charges further reduced the net returns to the farmers.

The suggestions provided by the farmers reflect practical and actionable strategies. These include the provision of government subsidies, improved extension support for irrigation and pest management, encouragement for cooperative marketing and promotion of value-added dragon fruit products. Emphasis was also placed on developing price stabilization mechanisms and raising consumer awareness about the fruit's health benefits.

The findings underscore the need for a targeted and integrated approach by policymakers, agricultural departments, and marketing institutions to address these bottlenecks. Doing so would help unlock the full potential of dragon fruit as a sustainable and profitable crop for the farming community in the region.

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