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Constraints faced by the farmers in date palm cultivation of Banaskantha and Patan distract of Gujarat

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Abstract

The study aims to identify the basic constraints faced by date palm growers. The respondents were selected from two districts, Banaskantha and Patan. Five villages from each distract was selected purposely based on higher cultivating area. A total of 120 farmers were interviewed using a pre-tested and structured schedule. The study employed frequency and percentage to analyze the data. Effect of unseasonal rain was the most prevalent weather constraints faced by the growers 76.67%. However, unavailability of market access, affecting 72.50% of respondents, additionally, 62.52% of growers were reported fruit spoilage problems due to inadequate market facilities. Moreover scarcity of irrigation water was the major technical constraints expressed by the 63.33% of the growers followed by Lack of knowledge about pollen collection and storage 59.16% lack of proper knowledge about production practices 56.67% and unavailability of sufficient pollen in time 50.83% respectively. While, higher cost of planting material in term of financial constraints was perceived by (55.00%) respondents.

Keywords: Date plam, constraints, respondents, growers

Introduction

The date palm (*Phoenix dactylifera* L.) is an important emerging crop of the arid and semi arid region of India (Meghwal *et al* 2011) [10]. It is one of the most potential fruit crop for dry arid zone of the country with irrigation facilities. It is cultivated for its sweet edible fruits and is considered to be the oldest amongst the cultivated tree fruits. Date palms possess various health benefits, including enhancing digestive health, (Al-Okbi 2022) [1]. It is a low cost source of carbohydrates; amino acids and energy (Hussain *et al* 2020) [8]. It also improves heart health due to their high fiber and mineral content (Al-Dashti *et al* 2021). Date palms play a role in enhancing food security and agricultural sustainability in arid regions (Ata *et al* 2014) [3]. Major area and production of date palm is currently dominated by Middle East and other African countries. In India, it is mainly cultivated in Gujarat, Rajastan, and parts of Punjab, Haryana, and Tamil nadu (Shah 2014) [13]. Date palm is cultivated particularly in the north western parts of the state, (Kutch and surrounding areas) and Northern Gujarat. The area under date palm cultivation in Gujarat is 20591 ha, were north Gujarat contributes 19860 ha. District banaskantha and Patan has emerged as other potential districts for date plam cultivation in the state after Kutch, contributing 231 and 232 ha respectively (Anonymous 2024) [2]. Date palms emerging as a significant crop with considerable economically importance crop in the region. North Gujarat has favorable climatic conditions for date palm cultivation, similar to the arid and semi-arid regions where this crop thrives. The district's hot and dry environment, combined with moderate water availability from irrigation, makes it suitable for growing date palms. The Banaskantha and Patan district has shown potential in developing date palm cultivation as a commercial crop given the rising demand for dates in domestic markets. Despite the promising prospects, adoption of date palm cultivation is less in the North Gujarat. Therefore this study was planned to find out the major constraint faced by the farmers for adoption of date palm cultivation, so that the need based research and extension strategies can to the larger adoption of the date palm in the district.

Material and Methods

The present study was conducted in north Gujarat. Total 120 date palm growers having at least of five years experience were selected purposely. The data were collected using well design questioners through personnel interview. Collected data tabulated and analyzed using frequency and percentage. The constraints identified by respondents were evaluated based on the severity of the issues. A closed-ended questionnaire was designed to capture a comprehensive list of common obstacles that could impede the adoption of advanced date palm cultivation technologies by farmers. These constraints were operationally defined as the challenges faced by date palm growers in implementing scientific cultivation practices.

Results and Discussion

The Several constraints in date plam cultivation were identified. However, the constraints were differs from respondents and for analysis of data the constraints was classified into four groups' namely Weather, Technological,

Financial and Marketing.

Weather Constraints

The data presented in the table 1 shows that the weather related constants faced by the farmers. Majority of the date palm growers 76.67% express that the fruit spoilage due to unseasonal rains during fruit maturity was the big problem to them. However, cracking of fruit and fruit spots due to uncertainty weather was perceived by 45.00%. The early onset of mansoon during Jun- July spoiled date plam which reduces quality and price of date plam in the region. Rainfall during the flowering stage and harvest season is likely to cause some damage to the fruits (Khan and Hassan 2016) [7], (Fatima *et al* 2016) [5] and (Ibupoto *et al* 2015) [9].

Table 1: Weather Constraints faced by date palm growers

Sr. No.	Constraints	Frequency	Per cent
1	Fruit spoilage due to unseasonal rain during fruit maturity	92	76.67
2	Fruit cracking and fruit spots due to uncertain weather	54	45.00

Technical constraints

The data depicted in the table 2 shows that the technical constants faced by the farmers. The most frequently reported constraint was the scarcity of irrigation water, affecting 63.33% of respondents. This was followed by a lack of knowledge about pollen collection and storage, which impacted 59.16% of participants and a lack of proper knowledge about production practices, reported by 56.67%. The unavailability of sufficient pollen in time was noted by 50.83% of respondents, and issues related to genuine planting material were observed in 42.50% of cases. The need for more labor due to uneven ripening was highlighted by 30.00% of respondents, while tedious practices such as pollination and fruit picking were a concern for 25.00%. Lastly, the lack of mechanization affected 36.66% of participants. Overall, the data underscore the significant impact of resource availability and knowledge gaps on agricultural productivity, with water scarcity and technical knowledge deficiencies being the most critical factors. The similar results were also reported by (Pandya *et al* 2017) [12] and (Morwal *et al* 2020) [11].

Table 2: Technical constraints faced by date palm growers

Sr. No.	Constraints	Frequency	Per cent
1	Lack of proper knowledge about production practices	68	56.67
2	Unavailability of sufficient pollen in time	61	50.83
3	Lack of knowledge about pollen collection and storage	71	59.16
4	Unavailability of genuine planting material	51	42.50
5	More labours required for picking due to uneven ripening	36	30.00
6	Tedious practices *viz*. pollination and fruit picking	30	25.00
7	Scarcity of irrigation water	76	63.33
8	lack of mechanization	44	36.66

Financial constants

The data sowed on table 3 indicated an analysis of cost-related constraints in date palm production reveals several financial challenges faced by producers. The most significant issue identified is the higher cost of planting material, which affects 55.00% of respondents. This is closely followed by higher labor costs, impacting 48.33% of participants. Additionally, the higher cost of pollen material was a concern for 39.16% of respondents, while 42.50% reported facing challenges due to higher electricity charges in date plam production. The data highlights the substantial financial burdens associated with planting material, labor, and utility costs, indicating areas where cost management and support could improve agricultural productivity. The results were agreement with the findings of (Pandya *et al* 2017) [12] and (Morwal *et al* 2020) [11].

Table 3: financial constants faced by date palm growers

Sr. No.	Constraints	Frequency	Per cent
1	Higher cost of planting material	66	55.00
2	Higher cost of pollen material	47	39.16
3	Higher electricity charges	51	42.50
4	Higher laboure cost	58	48.33

Marketing constants

An examination of marketing constraints encountered by date palm growers highlights several critical issues Table 4. The most significant challenge reported was the unavailability of market access, affecting 72.50% of respondents. Additionally, 62.52% of growers faced fruit spoilage due to inadequate market facilities. Poor transport facilities were cited by 35.83% of participants, while higher transportation costs impacted 24.16% of growers. Lack of storage facilities was the least frequently reported constraint, affecting 17.50% of respondents. These findings underscore the major obstacles in marketing and distribution that date palm growers face, particularly the need for improved market access and facilities to reduce spoilage and logistical challenges. The results were also agreement with the findings of (Pandya *et al* 2017) [12] and (Morwal *et al* 2020) [11]. Elsabea 2012 [4] also reported the fruit spoilage of date palm lack due to marketing in Saudi arebia.

Spoilage of produces due to lack of storage facilities was also reported by (Gupta *et al* 2022) [6] in vegetables.

Table 4: Marketing constants faced by date palm growers

Sr. No.	Constraints	Frequency	Per cent
1	Unavailability of market	87	72.50
2	Fruit spoilage due to lack of market facility	75	62.52
3	Poor transport facilities	43	35.83
4	Higher transportation cost	29	24.16
5	Lack of storage facility	21	17.50

Conclusion

The findings revealed that date palm growers are encountering a variety of significant challenges that adversely affect the adoption of date palm in the region. To

enhance production, it is essential to plan and implement improved agricultural practices. Government policy support is necessary to develop storage and local market facility to reduce fruit losses and to improve the current situation for date palms in the area. Growers are encouraged to adhere to all recommended practices, improve the knowledge on pollination practice, bagging and other innovative cultural practices. Researchers should focus on mechanizing the date harvesting process, investigating early-ripening domestic and international cultivars to mitigate the impact of monsoon rains.

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