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Socio-economic status of dragon fruit farmers in Haryana

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ABSTRACT

The study was undertaken to analyse the socio-economic status of dragon fruit farmers from all over Haryana. The results revealed that the majority of dragon fruit growers (58.75%) belonged to the middle-age group of 35–50 years, indicating active working participation. In terms of education, 42.5% growers attained senior secondary level, while 25% were graduates and above, reflecting relatively better literacy compared to the general farming community. About 70% of the respondents belonged to nuclear families. The small and medium farmers dominated with 26.25% and 27.5% share, respectively, while only 5% were large farmers. Annual income ranged mostly between ₹ 1.5–3.0 lakh (57.5%). Nearly half of the farmers (48.75%) cultivated dragon fruit on one acre, while 27.5% had less than one acre under the crop.

Dragon fruit (*Hylocereus spp.* and *Selenicereus spp.*) is native to Central and South America has become globally significant due to its resilience against abiotic stress, pest resistance and low input requirements, making it suitable for cultivation even on marginal lands. Being a Crassulacean Acid Metabolism (CAM) plant, it efficiently conserves moisture and performs well in arid and semi-arid environments (Wakchaure *et al.*, 2021). Its multiple annual harvests, long productive lifespan and high benefit-cost ratio make it an attractive crop for commercial cultivation (Kikon *et al.*, 2021).

It introduced in India in the late 1990s, and its cultivation area increased substantially from only 4 hectares in 2005 to over 3,000 hectares by 2020 (Wakchaure *et al.*, 2021). According to latest data for year 2023-24 it is cultivated on about 15,000 hectares

with a total production exceeding 55,000 metric tonnes (Anonymous, 2025). Major producing states include Andhra Pradesh, Telangana, Maharashtra and Karnataka (Sathe *et al.*, 2024).

In Haryana, where horticultural crops cover about 6.79% of total agricultural area, dragon fruit cultivation remains limited but promising due to the state's favourable climate and proximity to metropolitan markets (Economic Survey of Haryana, 2025). Expanding its production could enhance income diversification among farmers and strengthen the state's horticultural sector. However, to exploit its full potential, there is a need for systematic assessment of production costs, marketing margins, price spread, and overall economic viability (Akhil *et al.*, 2024). Consequently, the present study has been undertaken.

The study was conducted in Haryana state during the year 2024-25. Primary data were collected from the 80 dragon fruit farmers from all over Haryana while secondary data were collected from various published/ unpublished sources. Primary data were collected by multistage purposive sampling. Data related to cost and returns of production and marketing were collected through a well-developed pre-tested interview schedule. For studying the marketing pattern of dragon fruit, 5 marketing intermediaries each from respective markets were selected for the collection of data regarding various costs involved, margins of market intermediaries in the marketing of dragon fruit.

The socio-economic characteristics of the 80 dragon fruit growers surveyed in Haryana are presented in Table 1. The age distribution revealed that 14 respondents (17.5%) were below 35 years of age, while the majority, comprising 47 farmers (58.75%), belonged to the 35-50 years age group. The remaining 19 farmers (23.75%) were above 50 years of age. Regarding educational attainment, 26 respondents (32.5%) had completed education up to the secondary level, 34 farmers (42.5%) had studied up to the senior

secondary level, and 20 respondents (25%) were graduates or possessed higher qualifications. Analysis of family structure indicated that most farmers (70%) belonged to nuclear families, whereas 24 respondents (30%) were members of joint families.

The landholding pattern showed that 15 farmers (18.75%) were marginal farmers, 21 (26.25%) were small farmers, 18 (22.5%) were categorized as semi-medium farmers, and 22 (27.5%) belonged to the medium farmer category. Only four respondents (5%) were large farmers. In terms of annual income, 20 farmers (25%) reported a gross annual income below ₹ 1.50 lakh, while 46 farmers (57.5%) earned between ₹ 1.50 lakh and ₹ 3.00 lakh. The remaining 14 farmers (17.5%) reported annual incomes exceeding ₹ 3.00 lakh. Concerning dragon fruit cultivation, 22 farmers (27.5%) cultivated the crop on less than one acre, 39 farmers (48.75%) on one acre, and 19 farmers (23.75%) on more than one acre of land. The present findings are consistent with those reported by Chongloi *et al.* (2022) and Akhil *et al.* (2024) in studies conducted across different states of India.

Table 1. Socio-economic characteristics of sample farmers in Haryana

Variable	Category	Frequency	Percent
Age	up to 35	14	17.5
	35-50	47	58.75
	>50	19	23.75
Education	Secondary	26	32.5
	Senior Secondary	34	42.5
	Graduation or above	20	25
Family type	Nuclear	56	70
	Joint	24	30
Land holding size	Marginal (<1 ha)	15	18.75
	Small (1-2 ha)	21	26.25
	Semi-medium (2-4 ha)	18	22.5
	Medium (4-10 ha)	22	27.5
	Large (>10 ha)	4	5
Income level	<1.50 lakh	20	25
	1.50-3.00 lakh	46	57.5
	>3.00 lakh	14	17.5
Area under dragon fruit	<1 acre	22	27.5
	1 acre	39	48.75
	>1 acre	19	23.75

The study highlights the socio-economic profile of dragon fruit growers in Haryana, revealing that adoption is largely driven by young, educated farmers with small to medium landholdings. Most growers

belong to nuclear families and cultivate dragon fruit on limited acreage to diversify income sources. A majority of households earn ₹ 1.50–3.00 lakh annually, and nearly half grow the crop on one acre,

showing its suitability for small-scale farming. Overall, dragon fruit offers strong income potential, though further support in training, marketing, and post-harvest management is needed.

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Conflict of Interest

The authors have no conflict of interest to declare.

Data Sharing

All relevant data are included in the manuscript.

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