Economic analysis of pearl millet cultivation and constraints faced by farmers in Haryana

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ABSTRACT

The present study was conducted in Mahendergarh, Rewari, and Rohtak districts of Haryana. A total of 86 farmers were selected from the three districts. The results of the study showed that the total cost of pearl millet cultivation was Rs 55,420, 53,509 and 57,539 and 55,489 per ha and return over variable cost was Rs 28,715, 26,702 and 18,436 and 24,618 per ha in Mahendergarh, Rewar, and Rohtak districts and overall respectively. The overall B-C ratio of more than one revealed that pearl millet cultivation was a profitable and promising enterprise in the study area. The analysis of constraints in cultivation of pearl millet as opined by the sampled farmers exhibited that non-availability of suitable machine for harvesting, price realization less than MSP/under-pricing of their produce, non-adoption of package of practices/low inputs used and low demand for millet produce were the major constraints in the study area.

Keywords: Pearl millet; production; B-C ratio; constraints

INTRODUCTION

Millets, a group of small seeded grasses, belong to the family Poaceae and serve as important grain and fodder crops. They are being utilized as a staple food in many under-developing and developing countries, especially having dryland agriculture. Millets are the 6th most important crop of cereals. Millets are originated from African regions and then spread to the different parts of the world during trading and establishment of colonies.

Millets are also called as nutri-cereals due to presence of proteins, fibre, vitamins and minerals especially having micronutrients in them. Millets provide nutritional security and it is necessary to promote millets since they are healthy and nutritious. The cultivation of millets is very easy as they require less amount of maintenance, are drought resistant in nature and mature earlier than cereal crops like wheat and rice (Vijayreddy and Reddy 2023).

Bajra is considered to be a poor man's food. Besides, being a staple diet of about 10 per cent population of our country, it is also an important fodder crop. It is not expensive like pearl but it's definitely having pearl like quality which is beneficial to the body. Hundred grams of bajra contains energy (360 calories), moisture (12 g), protein (12 g), iron (8 mg), carbohydrates (67 g), minerals (2 g), fiber (1 g), calcium (42 mg), phosphorus (242 mg) and fat (5 g). In some varieties, its grains contain as much as 18 to 20 per cent protein which is nearly double than that of commonly consumed cereals (Sharma et al 2022).

India is the largest producer of millets in the world. India's pearl millet production accounted for 40.51 per cent in the world production of millets in 2020. The major millets producing states in India are Rajasthan, Karnataka, Maharashtra, Uttar Pradesh, Haryana, Gujarat, Madhya Pradesh, Tamil Nadu, Andhra Pradesh and Uttarakhand. Six states namely Rajasthan, Karnataka, Maharashtra, Uttar Pradesh, Haryana and Gujarat accounted for more than 83 per cent share in total millet production. Rajasthan contributes 28.61 per cent of the total millet production in India (https://apeda.gov.in/milletportal/Production.html).

METHODOLOGY

The study was carried out during 2022-23 in three districts (Mahendragarh, Rewari and Rohtak) of Haryana state. The purposive and random sampling techniques were used to select blocks, villages and farmers. Eighty-six farmers were selected randomly from the three districts to extract relevant information pertaining to the extent of use of various inputs. The prevailing market prices of inputs, hired labour and imputed value of family labour were taken into account to work out economic viability of pearl millet.

RESULTS and DISCUSSION

The data tabulated in Table 1 depict that harvesting and threshing were the major components of total variable expenses that accounted for 26.61, 26.63 and 24.77 per cent of the total cost in Mahendergarh, Rewari and Rohtak districts and overall average was 25.98 per cent of three districts. The highest component of total expenses incurred in cultivation of pearl millet was rental value of land with 33.16, 33.83 and 34.79 per cent of total cost in Mahendergarh, Rewari and Rohtak and 33.93 per cent in overall respectively. The other components with higher percentage share in total cost were field preparation with 8.07, 7.87, 11.08 and 9.05 per cent and the management and risk charges accounted for 7.44, 7.45, 7.23 and 7.37 per cent of total cost in Mahendergarh, Rewari and Rohtak districts and overall respectively. Plant protection cost ranged from 5.07 to 7.40 per cent across the three districts. The largest share of rental value of land to the total cost shows that the land rent was high in the study area.

The gross return of Rs 60,825, 57,373 and 50,923 and net return of Rs 5,404, 3,864 and –6,616 per ha were recorded in Mahendergarh, Rewari and Rohtak districts respectively.

The negative net return in Rohtak district was due to low yield of pearl millet. The B-C ratio was 1.10, 1.07 and 0.89 in Mahendergarh, Rewari and Rohtak districts respectively that indicated profitability of pearl millet cultivation in the study area except Rohtak district. The total cost of pearl millet cultivation was estimated to be Rs 55,489 per ha in overall with Rs 55,420, 53,509 and 57,539 per ha in Mahendergarh, Rewari and Rohtak respectively.

In a study conducted on pearl millet in Jaipur district of Rajasthan, Choudhary and Kumar (2023) reported that in marginal size farms, the average area per ha holding was 0.66 ha, in small size farms it was 1.59 ha and in medium size farms it was 4.32 ha. The total cost of pearl millet cultivation for marginal, small and medium size farms was Rs 36,010, 35,007 and 34,223 per ha respectively. Medium and small size farms saw excellent gross earning of Rs 51,750 per ha. The net return per ha obtained by small size farms was higher as compared to marginal and medium size farms. Compared to small and medium size farms with input-output ratio of 1:1.44 and 1:1.51, marginal size farms had the highest input-output ratio per ha.

Lal et al (2020) observed that in case of pearl millet in Sikar district of Rajasthan, the total cost of cultivation for small, medium and large size farms was Rs 27,020.70, 26,672.20 and 25,390.50 per ha respectively. The gross return obtained by large and medium size farms was higher (Rs 38,000/ha) as compared to small size farms (Rs 36,000/ha) and the net return of large size farms was higher (Rs 12,609.50/ ha) as compared to medium (Rs 11,327.80/ha) and small (Rs 8,979.30/ha) size farms. Input-output ratio per hectare was highest in large (1:1.50) as compared to medium (1:1.42) and small (1:1.33) size farms.

Lamba et al (2022) investigated the cost of cultivation, marketable and marketed surplus of pearl millet in Gird region of Madhya Pradesh and found that the average cost of cultivation was Rs 20,655.73 per ha. The cost of cultivation of pearl millet decreased with the increase in size of landholding. An overall gross income on cultivation was observed Rs 23,483.66 per ha. The B-C ratio was highest (1.17) on large farms followed by 1.14 and 1.10 on small and medium farms respectively.

In a study conducted in Jhajjar district of Haryana, Sharma et al (2022) reported that the average cost of cultivation of pearl millet was Rs 48,269, for marginal Rs 41,464, for small Rs 48,543, for medium Rs 50,464 and for large farms Rs 52,606 per ha. The cost of production per quintal was Rs 1,974 for marginal, Rs 1,839 for small, Rs 1,758 for medium and Rs 1,754 for large farmer categories. The overall input-output ratio obtained was 1:1.21, 1:1.22, 1:1.28 and 1:1.29 for marginal, small, medium and large categories of farmers respectively.

Table 1. Cost and return of pearl millet cultivation during 2022 (Rs/ha)

Component	District			Overall
	Mahendragarh	Rewari	Rohtak	
Field preparation (a)	4,475 (8.07)	4,213 (7.87)	6,373(11.08)	5,020 (9.05)
Seed (kg) and sowing (b)	2,825 (5.10)	2,875 (5.37)	2,938 (5.11)	2,879 (5.19)
Manures and fertilizers (c)	3,563 (6.43)	3,165 (5.91)	4,235 (7.36)	3,654 (6.59)
Irrigation (d)	1,463 (2.64)	1,450 (2.71)	820 (1.43)	1,244 (2.24)
Plant protection (weeds, insect pests and diseases control) (e)	4,100 (7.40)	3,825 (7.15)	2,920 (5.07)	3,615 (6.51)
Harvesting and threshing (f)	14,750 (26.61)	14,250 (26.63)	14,255 (24.77)	14,418 (25.98)
Total (a to f) (Rs)	31,175 (56.25)	29,778 (55.65)	31,540 (54.82)	30,831 (55.56)
Interest on working capital	935 (1.69)	893 (1.67)	946 (1.64)	925 (1.67)
Variable cost	32,110 (57.94)	30,671 (57.32)	32,486 (56.46)	31,756 (57.23)
Management and risk factor	4,122 (7.44)	3,988 (7.45)	4,163 (7.23)	4,091 (7.37)
Transportation	813 (1.47)	750 (1.40)	875 (1.52)	813 (1.46)
Rental value of land	18,375 (33.16)	18,100 (33.83)	20,015 (34.79)	18,830 (33.93)
Total cost	55,420 (100.00)	53,509 (100.00)	57,539 (100.00)	55,489 (100.00)
Main production	51,150	47,960	44,065	47,725
By-product	9,675	9,413	6,858	8,648
Gross return	60,825	57,373	50,923	56,373
Return over variable cost	28,715	26,702	18,436	24,618
Net return	5,405	3,864	–6,616	884
B:C	1.10	1.07	0.89	1.02

Figures in parentheses are per cent values

Table 2. Constraints faced by pearl millet growers (n = 86)

Constraint	Growers		Rank
	Number	Percentage	
Non-availability of suitable machine for harvesting	80	93.02	I
Price realization less than MSP/under-pricing the produce	76	88.37	II
Non-adoption of package of practices/low inputs used	73	84.88	III
Low demand for millet produce	69	80.23	IV
Lack of storage facilities at farm level	55	63.95	V
Lack of market intelligence	53	61.63	VI

Multiple responses

Constraints faced by pearl millet growers

Table 2 shows that among all the six constraints in the production of pearl millet, non-availability of suitable machine for harvesting (93.02%) and price realization less than MSP/under-pricing their produce (88.37%) were ranked at first and second place followed by non-adoption of package of practices/low inputs used (84.88%), low demand for millet produce (80.23%), lack of storage facilities at farm level (63.95%) and lack of market intelligence (61.63%) ranked at third to sixth place.

Kumari et al (2018) reported that in Jhunjhunu district of Rajasthan, the major constraints of the farmeres in marketing of pearl millet were high fluctuation in prices and high cost of labour. The other constraints were lack of storage facilities, high cost of transportation, malpractices done by middlemen, lack of market intelligence among growers and delay in cash payment.

In a study conducted in Burkina Faso (West Africa), Rouamba et al (2021) reported that pearl millet production, recurrent drought, *Striga hermonthica* infestation, shortage of labour, lack of fertilisers, lack of cash and the use of low-yielding varieties were the main challenges hindering pearl millet production in the study area.

Abdella et al (2021) reported that in Hamelmalo sub Zoba, Zoba Anseba, the major constraints were unequal distribution of rainfall, weeds, insect pests and diseases damage, poor field management and poor application of inputs.

Okumu et al (2023) attributed the low pearl millet production in Eritrea to inadequate rainfall distribution, poor crop management by poorly resourced farmers, unavailability and high prices of farm inputs and low adoption of improved varieties by the farmers.

CONCLUSION

It is concluded from the study that the the total cost of cultivation was Rs 55,420, 53,509, 57,539 and 55,489 and the return over variable cost was Rs 28,715, 26,702, 18,436 and 24,618 per ha for pearl millet in Mahendergarh, Rewari and Rohtak districts and overall respectively. The overall B-C ratio of more than one reveal that pearl millet cultivation was a profitable and promising enterprise. The analysis of constraints in cultivation of pearl millet as opined by the sampled farmers depict that non-availability of suitable machine for harvesting, price realization less than MSP/under-pricing their produce, non-adoption of package of practices/low input used and low demand for millet produce were the major constraints in the study area.

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