The Pharma Innovation Journal 2022; SP-11(9): 2164-2167

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(9): 2164-2167

www.thepharmajournal.com
Received: 08-06-2022
Accepted: 12-07-2022

Tannu Sharma
Department of Agricultural Economics, College of Agriculture, Indira Gandhi Agricultural University, Raipur, Chhattisgarh, India

Dr. Vijay Kumar Choudhary
Department of Agricultural Economics, College of Agriculture, Indira Gandhi Agricultural University. Raipur, Chhattisgarh, India

Mukesh Kumar Anant
Department of Agricultural Economics, College of Agriculture, Indira Gandhi Agricultural University, Raipur, Chhattisgarh, India

Corresponding Author:
Tannu Sharma
Department of Agricultural Economics, College of Agriculture, Indira Gandhi Agricultural University, Raipur, Chhattisgarh, India

To estimate the costs and returns of pearl millet in Jhajjar district of Haryana

Tannu Sharma, Dr. Vijay Kumar Choudhary and Mukesh Kumar Anant

Abstract
This study is based on An Economic Analysis of Pearl millet (*Pennisetum glaucum*) in Jhajjar District of Haryana. Bajra is considered to be a poor man's food. Besides, being a staple diet of about 10 per cent population of our country. Pearl millet is known to be rich in nutrients like - vitamins, minerals and essential fatty acids have benefits in terms of prevention of degenerative disease besides their known functions of preventing nutritional deficiency diseases. This thesis study was conducted in Jhajjar district of Haryana in four villages named as Chhara, Mandhoti, Matan, Bahadurgarh. Primary data was collected through personal interview method with the help of pre-tested questionnaire. Simple average method and percentage method were used to analyze the data. The average cost of cultivation of pearl millet was calculated Rs. 48269, for marginal Rs. 41464, for small Rs. 48543, for medium Rs. 50464 and for large farmer cost of cultivation was Rs. 52606 per hectare. During the study cost of production per quintal was came out to be Rs. 1974 for marginal farmer, Rs. 1839 for small farmer, Rs. 1758 for medium farmer and Rs. 1754 for large farmer category. The overall input-output ratio was obtained 1:1.21, 1:1.22, 1.28 and 1:1.29 for marginal, small, medium and larger category farmers respectively.

Keywords: Pearl millet, primary data, cost of production, input-output ratio

Introduction
The term "millet" comprises several genera of annual grasses that produce small seeds grown as cereal crops, although some millets are grown as forages rather than for grain production.
There are about 6,000 varieties of millet, categorized into several main types of millet. Millet is a significant food staple of many parts of the world. Of all the millets, pearl millet produces the largest seeds and is the most common variety used for human consumption. Pearl millet (Pennisetum *glaucum*) belongs to Gramineae family and also known as Bajra in Hindi and Bengali, Sajjalu in Telugu, Kambu in Tamil and Malayalam, Sajje in Kannada, Bajri in Gujarati. Bajra refers to the edible seeds of pearl millet plants. They grow in various shades of white, yellow, gray, brown and bluish-purple. Pearl millet, primarily a tropical plant, is often referred to as the 'Camel', because of its exceptional ability to tolerate drought. Even with minimal rainfall, millet will typically still produce reasonable yields. It is a crop grown mostly in tropical climates.
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 for animals. It is not expensive like pearl but it's definitely having pearl like quality which is beneficial to the body. 100 grams of bajra has the following nutritional values: energy (360 calories), moisture (12 g.), protein (12 g.), iron (8 mg), carbohydrates (67 g.), mineral (2 g.), fiber (1 g.), calcium (42 mg), phosphorus (242 mg) and fat (5 g.). In some varieties pearl millet grains have been reported to contain as much as 18 to 20 per cent protein which is nearly double than that of commonly consumed cereals. In India bajra ranks third in food grain after wheat and rice. As per source of Ministry of Agriculture the estimated production of total bajra in India was about 10.36 million tons during the year 2019-20. The major bajra growing states of the country are Rajasthan, Uttar Pradesh, Maharashtra, Gujarat and Haryana. Today, Rajasthan is the top producer of Bajra, as this unique crop usually cultivated during summers can withstand harsh climate, drought, low soil fertility and can yield good harvest even in the lands with low salinity and higher pH. Haryana is a small state of India; it covers only 1.4 percent of total geographical area of India.The production of bajra in Haryana was about 1.01 million tons during the year 2019-20. In Haryana the important bajra growing districts are Bhiwani, Mahendergarh, Rewari, Hisar and Jhajjar. The Jhajjar district is one of the major bajra growing district of Haryana. This district produced 6, 30,000 quintal or 63,000 tons of bajra grain from 35,000 hectares area during the year 2019-2020. In India it is one of the important millet crops which flourishes well even under adverse condition of weather. It is most drought tolerant crop among cereals and millets. It is also used as feed for poultry and green fodder or dry karbi for cattle. It is tall tillering annual plant which usually grows to a height of one to three meters.

Materials and Methods

Sampling framework

Jhajjar district have 6 blocks i.e., Badli, Beri, Bahadurgarh, Jhajjar, Matanhail & Salhawas. Out of 6 blocks Jhajjar and Bahadurgarh are selected purposively.

Out of study total area 94.92 per cent is come under cropland whereas 1.13 per cent is used for urban built-up land and 0.52 per cent in rural built-up area. Out of the total 6 blocks (Badli, Beri, Bahadurgarh, Jhajjar, Matanhail & Salhawas) in Jhajjar district, 2 blocks i.e., Jhajjar and Bahadurgarh blocks were selected purposively on the basis of maximum area under selected pearl millet for the purpose of the study. Four villages namely Chhara, Matan, Mandhothi and Bahadurgarh were selected purposively for the study looking to the responses of villagers and pearl millet grower

No. of farmers selected for study were 100 which were categorized in four categories Marginal, Small, Medium and Large.

Collection of data

Primary data collected from selected respondents. Data fulfilled through personal interview method with the help of pre-tested questionnaires.

The secondary data collected through different Government offices such as Department of Agriculture, Directorate of Economics and Statistics, Government of Haryana and through other sources.

Analytical tools and techniques

Some analytical tools and techniques were used as per following points mentioned below:

Cost Concept

1. **Cost A1:** This cost considered majorly shall include wages of labors, market rate of seed, fertilizers, land revenue, machinery cost etc.
2. **Cost A2:** Cost A1 + Rent paid for leased-in-land
3. **Cost B1:** Cost A1 + Interest on value of owned capital (excluding land)
4. **Cost B2:** Cost B1 + Rental value of owned land
5. **Cost C1:** Cost B1 + Imputed family labour (Owned)
6. **Cost C2:** Cost B2 + Imputed family labour (Owned)
7. **Cost C3:** Cost C2 + 10% cost of C2

Income measures

1. Gross income

Gross income = Net income + cost C

2. Net income

Net income = Gross income – cost C

3. Family labour income

It includes net income or loss plus imputed value of wages for the labour of farmer and his family.

4. Farm business income

It is the gross income minus total expenses of production excluding wages of family labour, interest on owned capital and rental value of land. It is measure of the earnings of farmer and his family for their capital investment, labour and managerial work.

F.B.I. = Family labour income + interest on working capital + Rental value of land

5. Input-Output Ratio

Input output ratio → O/I where I = total input and O = total output

6. Cost of production per quintal

It refers to total input cost divided by output value and then multiplying by the respective price of main and by-product.

Tabular Analysis

Tabular analysis was used to compare the value of costs, returns and production cost of crops of different size groups**.**

Averages

The average given in the present study related to weighted average. The following formula was used for calculating

Average = Total Sum of All Numbers / Number of Item in the Set.

Results and Discussion

The cost of cultivation (total variable cost+ total fixed cost) for pearl millet is shown in table 1. We can see here that the cost of cultivation per hectare for large farmer's category is high in comparison with another farmer's category. Basically, there is increased cost of cultivation trend from marginal farmer category to large farmer's category. This is because farmers having more numbers of fields/area are having much better resources than the farmers having less area. So, they have arranged good quality seeds, invested high in labor cost, and arranged highly efficient machinery and good fertilizer quality. Total variable cost for marginal Rs. 26546/ha, for small Rs. 31097/ha, for medium Rs. 31432/ha, for large Rs. 31943/ha calculated. If break variable cost into particulars S/n 1 to 7, total labour cost increasing for large farmers in comparison with small farmers, it is because large farmers normally engaged high numbers of hired labor than marginal farmers. Large farmers invest high in seeds arrangement than other category and therefore later we will see yield production in large farmers have more

Than other categories farmers. Total fixed cost came out for marginal Rs. 14918/ha, for small Rs17445/ha, for medium Rs. 19032/ha, for large Rs. 20664/ha. (Refer Table no. 1. for details values shown in next page) Table 2 shows related yield production (per ha) cost of production as per farmer category. For marginal farmers yield production is 21 qtl/ha, for small 26.4 qtl/ha, for medium 28.7 qtl/ha, form large 30 qtl/ha. Yield production for large category farmers higher than other categories because of good quality resources *viz* seeds, machinery, fertilizers etc. Per quintal sale price is taken as Rs 2250.If we calculate gross return then it is as follow, for marginal Rs. 50069, for small 59444, for medium Rs. 64510, for large Rs. 67676.From the net cost of cultivation, we have calculated cost of production per quintal, for marginal it is Rs1974 for small Rs. 1839, for medium Rs. 1758, for large 1754 and average value of cost of production per quintal is Rs. 1794.

In, Table 2 net return (Rs/ha) is calculated as per as per farmer category. It is Rs 8605, Rs 10901, Rs 14046, and Rs 15070 for marginal, small, medium, large farm category respectively. Average net return is Rs 12786/ha. Farm labour income is Rs 15989/ha in marginal farm category and in large farmer category Rs. 18034/ha. Reason is like marginal farmers engaged family labour high in comparison with high farmer due to budget constraint and marginal farmers have

less no. of area so normally they tend to cover by their own family member labour. The input output ratio for marginal 1.21, for small 1.22, for medium 1.28 and for large 1.29, average value of input output is 1.25 for the pearl millet crop per hectare yield production.

Table 3 shows cost & return on different cost concepts A1, A2, B1, B2, C1, C2, and C3. All cost on different cost concepts increasing from marginal farmers to large farmers. Average cost A1, A2 is Rs. 26499; B1 Rs27519, B2 Rs 42922, C1 Rs 32867, C2 Rs 48269, C3 Rs 53096.In same table, return on different cost concepts is also calculated as per farmer's category. Average return cost on A1 Rs. 33925, A2 Rs. 33925, B1 Rs. 32906, B2 Rs. 42922, C1 27558, C2 Rs. 12155, C3 Rs. 732

Table 1: Economics of pearl millet on different groups of farmer category

S/n	Particulars	Farmers Categories				Overall (Avgas)
		Marginal	Small	Medium	Large	
1.	Family-Owned Human Labour	7384	6596	4446	2964	5348
		(17.8)	(13.6)	(8.8)	(5.6)	(11.1)
2.	Hired Human Labour	4925	8258	10597	12168	8987
		(11.9)	(17.0)	(21.0)	(23.1)	(18.6)
3.	Total labour	12309	14854	15043	15132	14335
		(29.7)	(30.6)	(29.8)	(28.8)	(29.7)
4.	Bullock labour	0	0	0	0	0
		(0)	(0)	(0)	(0)	(0)
5.	Seed cost	1445	1919	1940	1987	1823
		(3.5)	(4.0)	(3.8)	(3.8)	(3.8)
6.	Fertilizer cost	1774	1977	1985	2001	1934
		(4.3)	(4.1)	(3.9)	(3.80	(4.0)
7.	Irrigation Charge	1892	2151	2146	2192	2095
		(4.6)	(4.4)	(4.3)	(4.2)	(4.3)
8.	Machine Charge	8105	9000	9109	9402	8904
		(19.5)	(18.5)	(18.1)	(17.9)	(18.4)
9.	Interest (4%) on working capital	1021	1196	1209	1229	1164
		(2.5)	(2.5)	(2.4)	(2.3)	(2.4)
10.	Total variable cost	26546	31097	31432	31943	30254
		(64.0)	(64.1)	(62.3)	(60.7)	(62.7)
11.	Rental value of owned land	13534	15006	16040	17031	15403
		(32.6)	(30.9)	(31.8)	(32.4)	(31.9)
12.	Land revenue	40	40	40	40	40
		(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
13.	Depreciation on implements	500	1412	1875	2423	1553
		(1.2)	(2.9)	(3.7)	(4.6)	(3.2)
14.	Interest (6%) on fixed capital	844	987	1077	1170	1020
		(2.0)	(2.0)	(2.1)	(2.2)	(2.1)
15.	Total fixed cost	14918	17445	19032	20664	18015
		(36.0)	(35.9)	(37.7)	(39.3)	(37.3)
16.	Gross Total (TVC+TFC) A+B	41464	48543	50464	52606	48269
		(100)	(100)	(100)	(100)	(100)

Table 2: Yield and income of pearl millet on different size groups of farmer category

Yield and Income (in INR)	Farmers Category				Overall (Average)
	Marginal	Small	Medium	Large	
Cost of Cultivation	41464	48543	50464	52606	48269
Gross Return (per ha)	50069	59444	64510	67676	60425
Farm business income (per ha)	30367	33491	35609	36234	33925
Family labour income	15989	17497	18492	18034	17503
Net Return (per ha)	8605	10901	14046	15070	12155
Farm investment income (per ha)	22983	26895	31163	33270	28578
Yield (in Qtl) per ha	21	26.4	28.7	30	27
Cost of production	1974	1839	1758	1754	1831
Input Output Ratio	1.21	1.22	1.28	1.29	1.25

Table 3: Cost & Return on different cost concept of pearl millet on different farmer category

Cost in terms of cost concepts	Farmer Category				Overall (Average)
Items	Marginal	Small	Medium	Large	
Cost A1	19702	25953	28901	31442	26499
Cost A2	19702	25953	28901	31442	26499
Cost B1	20546	26941	29978	32611	27519
Cost B2	34080	41947	46018	49642	42922
Cost C1	27930	33537	34424	35575	32867
Cost C2	41464	48543	50464	52606	48269

Cost C3	45611	53397	55511	57867	53096
Return in terms of cost concepts	**Farmer Category**				**Overall (Average)**
Items	**Marginal**	**Small**	**Medium**	**Large**	
Cost A1	30367	33491	35609	36234	33925
Cost A2	30367	33491	35609	36234	33925
Cost B1	29523	32503	34532	35065	32906
Cost B2	15989	17497	18492	18034	17503
Cost C1	22139	25907	30086	32101	27558
Cost C2	8605	10901	14046	15070	12155
Cost C3	4458	6047	8999	9809	7328

Conclusion

We calculated and analyzed cost and return of pearl millet per hectare for large farmer's category is high in comparison with another farmer's category. Basically, there is increased cost of cultivation trend from marginal farmer category to large farmer's category if we check numerically analysis for four farmer categories, for marginal farmers cost of cultivation for pearl millet is Rs. 41464 per hectare; for small farmers Rs. 48543 per hectare for medium farmers Rs. 50464 per hectare, for large farmers Rs. 52606 per hectare. This is because farmers having more numbers of fields/area are having much better resources than the farmers having less area. So they have arranged good quality seeds, invested high in labor cost, and arranged highly efficient machinery and Good fertilizer quality. We calculated farm profit as per as per farmer category. It is Rs8605, Rs10901, Rs 14046, and Rs 15070 for marginal, small, medium, large farm category respectively. Average net return is Rs 12155/ha.

References

1. Agarwal PD, Pandey P, Yadav OP Singh. Trends of Area, Production and Productivity of Soybean Crop in Madhya Pradesh. International Journal of Tropical Agriculture. 2014;32:3-4.
2. Anjugam M, Alagumani T. Marketing practices and marketing efficiency of; c2019.
3. Organic minor Millets in Tamil Nadu, India, Int. J Curr. Microbiol. App. Sci. 2019;8(8):2898-2905.
4. Balaji MNSS, Chahal, Kataria P. Markets Intermediaries and their Margin in Marketing in Potato in Punjab. Indian Journal of Agricultural Marketing. 2010;24(2):164-177.
5. Chahal SS, Kataria Poonam. Constraints in the production and Marketing of Maize in Punjab. Agriculture Update. 2010;5(1-2):228-236.
6. Deshmukh Pawar DS, Landge BR, Yeware VV, PP. Marketed surplus and price spread in different channels of Pearlmillet marketing. International Journal of Commerce and Business Management. 2010;3(1):41-44.
7. Gajbhiye S, Wankhede RN, Kakde SJ. Growth and instability of chickpea production in Vidarbha region of Maharashtra. International Journal of Commerce and business management. 2010;3(2):172-174.
8. Gate MR, Khodiar MB, Sadhu BR, Shekhar Serene. Cost of cultivation of groundnut in Banaskantha district of Gujarat International research Journal; c2009, l(1).
9. Kaur H, Singh IP. Marketing of Kinnow is Sriganganagar District of Rajasthan state, Indian Journal of Agricultural Marketing. 2010;241:141-14.
10. Kumari Poonam, Garbar Singh, Dropati Saran, Thanuja P. Constraints face by the farmers in the marketing of Pearl millet in Jhunjhunu district of Rajasthan, Journal of Pharmacognosy and Phytochemistry. 2018;7(4):1720-1721
11. Mishra SK. Economics analysis of Production and Marketing of Green pea in Jaipur District (Rajasthan), Unpublished M.Sc. (Ag.) Agricultural Economics Thesis, Rajasthan Agriculture University, Bikaner, Campus-Jobner; c1998. p. 108-116.
12. Paswan AK, KK. Constraints faced by wheat growers in adoption of wheat production technology Agriculture Update. 2014;9(2):166-169.
13. Patil PR. Economics of production and marketing of bajra in Sangli district of Maharashtra State. M.Sc. (Agri.) Thesis, Submitted to Marathwada Agriculture University, Parbhani; c2003. p. 84.
14. Ram S, Kumar S, Singh V, Ram P, Tomar VKS, Singh AK. Economics of production to marketing of aromatic crops in Uttar Pradesh. Agricultural Economics Research Review. 2012;25(1):157-160.
15. Satpute TG, Potekar GM, Deshmukh KV, Chandel CG. Cost structure of kharif jowar in Marathwada region. Maharashtra J. Agril. Econ. 1990;3(1):57.
16. Shasikant VG, Dubey LR, Arpita Kotnala. Constraints faced by Red gram growers in Gulbarga district of Karnataka. Environment and Ecology. 2013;31(2):440-443.
17. Shelke SD, Nagure DV, Patil SN. Price spread and marketing pattern of Groundnut in Maharashtra State. Agriculture update. 2009;4(3-4):376-378.2 ref.
18. Shende NV, Rathod SA, Shingne SP, Panajwar AV, Gandhre AP. Growth and Instability of Gram in Western Maharashtra Region. Asian Resonance. 2017;6(2):28-31.
19. Singh S, Dikshit AK, Reddy Bz, Kuthe SB. Instability in Rice Production in Gujarat: A Decomposition Analysis. Asian Journal of economics and Empirical Research. 20141(1):6-9.
20. Sujata MPG, Chengappa, Ravi PC. Performance of market intermediaries in a regulated market. A case study. Indian J Agri. Mktg. 1989;3(1):1-10.
21. Suryawanshi SD. Resource use structure and allocation efficiency in bajra cultivation in Western Maharashtra. M.Sc. (Agri.) Thesis, Submitted to Mahatma Phule Krishi Vidyapeeth, Rahuri; c1991. p. 58.
22. Tandel VB, et al**.** cost structure and Profitability of Finger Millet in south Gujarat Region. International journal Of Agriculture Science; c2018, 10(4). ISSN: 0975-3710 & E-ISSN: 0975-9107.
23. Thakur Satyendra Singh and Sharma HO, Trend and Growth of Small Millets production in Madhya Pradesh as compared to India. International journals on Agricultural Science; c2017, 10(1). ISSN: 0975-3710 & E-ISSN: 0975-9107.