

**Education and Society**  
(शिक्षण आणि समाज)

**Special Issue**  
UGC CARE Listed Journal  
ISSN 2278-6864

# Education and Society

Since 1977

The Quarterly dedicated to Education through Social Development and  
Social Development through Education

March 2023

(Special Issue-I/ Volume-IV)



INDIAN INSTITUTE OF EDUCATION

128/2, J. P. Naik Path, Kothrud, Pune - 411 038

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Special Issue on the theme of  
“India @ 75: Sustainable Development through Commerce and Management”

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J. P. Naik Path, Kothrud, Pune- 38**

## Indian Institute of Education

### Education and Society

Special Issue on the occasion of International Conference on, "India @ 75: Sustainable Development through Commerce and Management", January 27-28, 2023 Organised by Dept. of Commerce and Management, Karmaveer Bhaurao Patil Mahavidyalaya, Pandharpur, (Autonomous) Dist- Solapur (M.S.)

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### Publisher:

Indian Institute of Education

J. P. Naik Path, Kothrud, Pune- 38

**Contact Numbers:** 8805159904, 9834109804

**Web-site:** [www.iiepune.org](http://www.iiepune.org)

**Email:** [educationandsociety1977@gmail.com](mailto:educationandsociety1977@gmail.com), [iiepune1948@gmail.com](mailto:iiepune1948@gmail.com)

Education and Society, the educational quarterly is owned, printed and published by the Indian Institute of Education, Pune. It is printed at Pratima Mudran, 1-B, Devgiri Istate, Survey No. 17/1-B, Plot no. 14, Kothrud Industrial Area, Kothrud, Pune 38. It is published by the Editor Dr. Jaysing Kalake at Indian Institute of Education J. P. Naik Path, Kothrud, Pune- 38. Opinions or views or statements and conclusions expressed in the articles that are published in this issue are personal of respective authors. The editor, editorial board and the institution will not be responsible for the same in any way.

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## Analysis of Costs and Prices of Bajara (millet) with Reference to Dry Land in Solapur District

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### Abstract:

The present study was carried out in all the tehsils in Solapur district to study cost of cultivation for Bajara production. The study was based on the primary data of 50 Bajara cultivators for the year 2020-21. The average per acre cost of cultivation of Bajara was estimated to Rs. 13712 and per quintal cost was estimated to Rs 3522. Amongst the different items of cost, human labor cost and machine labor cost was the major components of variable cost. Rental value of owned land is the major component of cost in case of fixed costs. The average production of Bajara (Millet) was 4.02 quintal per acre. The minimum support price for Bajara crop was Rs. 2000. The gross returns obtained from Bajara crop were Rs. 6520 and Net Return was Rs. (-) 7192 it means that Bajara growers have suffered a loss. The benefit-cost ratio of kharif Bajara in sample area was 0.70. It means that farmers have invested 1 rupee in Bajara production but they bear 0.30 paise net loss per rupees.

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### Introduction:

Bajara is popularly known as millet. Bajara is the most important food and fodder crop of dry land agriculture. It is a drought tolerant crop which is cultivated in low rainfall. It was originated in India and Africa. This crop is raised in Kharif, Rabi and summer season. Maharashtra, Haryana, Gujarat, Tamil Nadu, Uttar Pradesh these are the major Bajara cultivating states in India. Bajara is one of the most important food crops in India. Bajara is used as human food in various forms. Bajara is also used as a cattle feed, poultry food and for other industrial uses. Duration of Bajara crop was 70 to 90 days. Total Estimated area under Bajara crop was 6.77 million hectares, estimated production was 8.90 million tones and productivity were 1314 kg per hectore. In Maharashtra total area under Bajara crop was 719 thousand hectares, production was 593.92 thousand tones and productivity were 826 kg per hectore. In Solapur district total area under Bajara crop was 498.11 hundred hectares, production was 115.28 hundred tones and productivity were 231.44 kg. per hectore. Solapur district is also one of the major Bajara producing districts in Maharashtra. In all the tehsils of Solapur district Bajara was cultivated. The present investigation was attempted to study cost of cultivation of Bajara production, prices of Bajara Production, profitability of Bajara production and cost benefit ratio of Bajara production in the study area.

### Objectives of the Study:

The main objective of study is to analyze the costs and prices of Bajara with reference to dry land in Solapur district and specific objectives of the present study are as

follows-

1. To analyse the cost of Bajara Production in the area under study.
2. To study the prices of Bajara Production in area under study.
3. To study the profitability of Bajara crop Production in the area under study.
4. To estimate the benefit cost ratio of Bajara crop production in study area.

**Hypothesis:**

1. Bajara (Millet) crop is not profitable.

**4. Research Methodology:**

For the study undertaken researcher has used the multistage sampling. For the selection of sample farmers researcher has used the purposive sampling method. For selection of farmers researcher has selected non-irrigated land farmers purposefully and quota sampling method is used to select the Bajara crop farmer. Therefore, the researcher has used the purposive quota sampling method because there is no exact data of non-irrigated farmers of selected crops in Solapur district. The study was conducted in Solapur district as whole. From Solapur district all 11 tahsils, i.e. Pandharpur, Mangalwada, Malshiras, Madha, Karmala, Akkalkot, Barshi, Mohol, Sangola, Solapur North & Solapur South having maximum area under Bajara cultivation were selected. The study was based on primary data for the year 2020-21. Thus for present study 50 Kharif Bajara producers were selected as per the quota sampling method. These 50 respondents were selected from each tehsil. Data collection was made by preparing separate questionnaire/interview schedule for Bajara producer. The farmers were also asked the major problems being faced by them in production of Bajara.

**Result and Discussion:**

**1. Estimated Cost of Cultivation and Total Cost of Bajara (Millet) in Solapur District:**

**Table 1**

Estimated Cost of Cultivation and Total Cost of Bajara (Millet) in Solapur District  
( per Acre)

Sr. No	Elements of cost	ATC	%	Min.	Max.	SD
1	Human Labour- Hired	1781	12.99	0	9600	1461
2	Human Labour- Family	3099	22.60	0	7200	1839
3	Bullock Labour- Hired	231	1.69	0	2000	492
4	Bullock Labour- Owned	28	0.21	0	667	91
5	Machine Labour- Hired	2118	15.43	0	10000	1450
6	Machine Labour- Owned	66	0.48	0	2333	334
7	Seeds	561	4.09	167	1800	342
8	Fertilizer	554	4.04	0	2500	660
9	Manure	649	4.73	0	6000	1414
10	Insecticides	39	0.29	0	667	146
11	Irrigation (Water - Electricity Charges)	248	1.81	0	500	153
12	Crop Insurance	28	0.20	0	250	63
13	Interest on Working Capital	281	2.05	70	592	103
14	Miscellaneous	11	0.08	0	80	22
I)	Operational Cost (1 to 14)	9696	70.72	2353	20292	3459
15	Rental Value of Owned Land	3470	25.31	2250	16000	1914
16	Rent Paid on Leasedland	0	0.00	0	0	0
17	Land Revenue, Cesses & Taxes	36	0.26	0	200	54
18	Depreciation of Farm Builds & Implements	162	1.18	0	1200	196
19	Interest on Fixed Capital	108	0.79	60	833	118
II)	Fixed Cost (15 to 19)	3776	27.54	2460	17630	2095
III)	Total Cost of Cultivation (I + II)	13473	98.26	5736	33067	4421
20	Packaging cost	74	0.54	0	240	64
21	Transportation Cost	129	0.94	0	600	146
22	Sales Expenses in Market Committee	36	0.26	0	500	79
IV)	Selling And Distribution Cost (20 to 22)	239	1.74	13	960	232
	Total Cost / Cost of Sales (III + IV)	13712	100.00	5769	33167	4475

(Source: Field Survey)

### Variable Cost/ Operational Cost of Bajara (Millet):

In the case of Bajara production hired human labor cost incurred was ₹ 1781 (12.99%) per acre, and family labor cost incurred was ₹ 3099 (22.60%) per acre. Hired Bullock labor cost incurred was ₹ 231(1.69%) per acre. Hired machine labor cost incurred was ₹ 2118 (15.45%) per acre. Seeds cost incurred was ₹ 561 (4.09%) per acre for Bajara production. Fertilizer cost incurred was ₹ 554 (4.04 %) per acre. In case of Bajara production manure cost incurred was ₹ 649 (4.73%) per acre. Insecticides cost incurred was ₹ 39 (0.29%) per acre. Irrigation cost incurred was ₹ 248 (1.81%) per acre which includes water and electricity charges. In Bajara production crop insurance cost incurred was ₹ 28 (0.20%) per acre. Interest on Working capital cost incurred was ₹ 281 (2.05 %) per acre and miscellaneous cost incurred was ₹ 11 (0.08%) per acre in the sample study area. The average total operational or variable cost incurred was ₹ 9696 (70.72%).

### Fixed Cost of Bajara (Millet):

In fixed cost Rental value of owned land cost incurred was ₹ 3470 (25.31%) per acre in sample study area. Land revenue, cesses and taxes cost incurred was ₹ 36 (0.26%) per acre. Depreciation of farm builds and implements cost incurred was ₹ 162 (1.18%) per acre. Interest on fixed capital cost incurred was ₹ 108 (0.79%) per acre. Average total

fixed cost of Bajara cultivation incurred was ₹ 3776 per acre which is 27.54% of total cost.

#### Total Cost of Cultivation of Bajara (Millet):

Average total cost of cultivation of Bajara per acre was ₹13473 which was 98.26% of total cost or cost of sales. Out of total cost of cultivation operational cost was ₹ 9696 (70.72%) and fixed cost was 3776 (27.54%).

#### Selling and Distribution Cost of Bajara (Millet):

The packaging cost incurred was ₹ 74 (0.54%) per acre. Transportation cost from farm to local market was ₹ 129 (0.94%) per acre. The average sales expenses in market committee incurred was ₹ 36 (0.26%) per acre. Average total selling and distribution cost of Bajara was ₹ 239 (1.74%).

#### Total Cost /Cost of sales of Bajara (Millet);

In Bajara farming, per acre average total cost or cost of sales (total cost of cultivation + total marketing cost) was ₹ 13712 The share of variable cost in total cost or cost sales was ₹9696 (70.72%), fixed cost was ₹3776 (27.54%) and selling and distribution cost was ₹239 (1.74 %).

### 2. Estimated Cost of Production and Total Cost of Bajara (Millet) in Solapur District:

Table 2

Estimated Cost of Production and Total Cost of Bajara (Millet) in Solapur District (₹Per Quintal)

Sr. No	Elements of cost	ATC	%	Min.	Max.	SD
1	Human Labour- Hired	458	12.99	0	4200	798
2	Human Labour- Family	796	22.60	0	5800	1154
3	Bullock Labour- Hired	59	1.69	0	600	165
4	Bullock Labour- Owned	7	0.21	0	167	24
5	Machine Labour- Hired	544	15.45	0	3300	658
6	Machine Labour- Owned	17	0.48	0	233	36
7	Seeds	144	4.09	33	900	184
8	Fertilizer	142	4.04	0	1200	292
9	Manure	167	4.73	0	6000	964
10	Insecticides	10	0.29	0	500	75
11	Irrigation (Water - Electricity Charges)	64	1.81	0	400	108
12	Crop Insurance	7	0.20	0	104	23
13	Interest on Working Capital	72	2.05	30	559	98
14	Miscellaneous	3	0.08	0	60	14
D)	Operational Cost (1 to 14)	2491	70.72	1020	19199	3378
15	Rental Value of Owned Land	891	25.31	300	4800	1110
16	Rent Paid on Leasedland	0	0.00	0	0	0



17	Land Revenue, Cesses & Taxes	9	0.26	0	120	24
18	Depreciation of Farm Builds & Implements	42	1.18	0	300	64
19	Interest on Fixed Capital	28	0.79	8	427	62
II)	Fixed Cost (15 to 19)	970	27.54	321	4920	1188
III)	Total Cost of Cultivation (I + II)	3461	98.26	1341	23709	4448
20	Packaging cost	19	0.54	0	40	11
21	Transportation Cost	33	0.94	0	80	23
22	Sales Expenses in Market Committee	9	0.26	0	167	24
IV)	Selling and Distribution Cost (20 to 22)	61	1.74	20	167	39
	Total Cost / Cost of Sales (III + IV)	3522	100.00	1401	23729	4440

(Source: Field Survey)

### Variable Cost/ Operational Cost of Bajara (Millet):

In Bajara production hired Human labor cost incurred was ₹ 458 (12.99%) per quintal, and family labor cost incurred was ₹ 796 (22.60%) per quintal. Hired Bullock labor cost incurred was ₹ 59 (1.69%) per quintal and owned bullock labor cost was ₹ 7 (0.21%). Hired machine labor cost incurred was ₹ 544 (15.45%) per quintal and owned machine labor cost incurred was ₹ 17 (0.48%). Seed's cost incurred have ₹ 144 (4.09%) per quintal for Bajara production. Fertilizer cost incurred was ₹ 142 (4.04%) per quintal. In case of Bajara production manure cost incurred was ₹ 167 (4.73%) per quintal. Insecticide's cost incurred was ₹ 10 (0.29%) per quintal. Irrigation cost incurred was ₹ 64 (1.81%) per quintal. In Bajara production crop insurance cost incurred was ₹ 7 (0.20%) per quintal. Interest on Working capital cost incurred was ₹ 72 (2.05%) per quintal and miscellaneous cost incurred was ₹ 3 (0.08%) per quintal in the sample study area. The average total operational or variable cost incurred was ₹ 2491 (70.72%) per quintal in the area under study.

### Fixed Cost of Bajara (Millet):

Rental value of owned land cost incurred was ₹ 891 (25.31%) per quintal. Land revenue, cesses and taxes cost incurred was ₹ 9 (0.26%) per quintal. Depreciation of farm builds and implements cost incurred was ₹ 42 (1.18%) per quintal. Interest on fixed capital cost incurred was ₹ 28 (0.79%) per quintal. The average total fixed cost of Bajara cultivation incurred was ₹ 970 (27.54%).

### Total Cost of Cultivation of Bajara (Millet):

The average total cost of cultivation of Bajara was ₹ 3461 (98.26%) out of total cost of cultivation operational cost was ₹ 2491 (70.72%) and fixed cost was ₹ 970 (27.54%).

### Selling and Distribution Cost of Bajara (Millet):

Packaging cost was incurred ₹ 19 (0.54%) per quintal. The average transportation cost from farm to local market was ₹ 33 (0.94%) per quintal. The average sales expenses in market committee incurred was ₹ 9 (0.26%) per quintal. The average total selling and distribution cost of Bajara was ₹ 61 (1.74%) in study area of Solapur district.

### Total Cost /Cost of sales of Bajara (Millet):

In Bajara farming, the average total cost or cost of sales (total cost of cultivation + total selling and distribution cost) was ₹ 3522. The share of variable cost in total cost or cost sales was 2491 (70.72%), fixed cost was ₹ 970 (27.54%) and selling and distribution cost was ₹ 61 (1.74 %):

### 3. Gross Returns, Net Return and Benefit-Cost Ratio of Bajara (Millet):

Table 3

Gross Returns, Net Return and Benefit-Cost Ratio of Bajara (Millet)  
(₹ Per Acre)

Sr. No	Factor	Details	Returns
1	Gross Return	A) Own Consumption (in quintal)	2.25
		Price (in ₹)	1750
		Gross Return (output* price)	3937
		B) Production Sold (in quintal)	1.64
		Price (in ₹)	1572
		Gross Return (output* price)	2583
		C) Total Production A + B (in quintal)	3.89
		Gross Return (output* price) A + B	6520
2	Net Return	Total Cost of Production	13712
		Gross Return	6520
		Net Returns (Gross return- total cost)	-7192
3	Benefit-Cost Ratio	Gross Return / Total Cost	0.48

Source: Field Survey

In case of Bajra farming, productivity of kharif Bajara is 3.83 quintal per acre and farmers get averagely ₹ 1572 price per quintal at local market. Out of total production own consumption of Bajara is 2.25 quintal per acre and production sold is 1.64 quintal per acre. Gross return of Bajara is ₹ 6520 per acre out of which ₹ 2583 (39.62%) is from sell of Bajara production and ₹ 3937 (60.38%) is from own consumption of Bajara by farmers. Net return of Bajara production is ₹ (-) 7192. It means that Bajara growers have a burden (loss) of ₹ 7192. The benefit-cost ratio of non-irrigated Bajara in sample area is 0.48. It means that farmers have invested rupee 1 in Bajara production but they bear 0.52 paise net loss per rupee.

### Hypothesis Testing:

Researcher has formulated the hypotheses on the profitability of Bajara in area under

study. This hypothesis is-

**Bajara Crop is not profitable:**

To study the hypothesis Bajara Crop is not profitable, Researcher was used the one sample t-test to test the hypothesis and taken test value = 0.

**Table 4**  
**Profitability of Bajara Crop**

Variable	N	Mean	SD	SE Mean	Test value = 0		T	P
					95% Lower Bound			
Bajara	50	-10292	7059	998	-11966		-10.31	1

The above testing of hypothesis reveals that p value of Bajara crops is greater than the level of significance i.e. 0.05 hence it is concluded that the null hypothesis i.e. Bajara Crop is not profitable is accepted and the study reject the alternative hypothesis i.e. Bajara Crop is profitable. It concludes that Bajara crops is not profitable in the area under study.

**Conclusion:**

In Bajara farming, per acre average total cost or cost of sales was ₹ 13712. The share of variable cost in total cost or cost sales was ₹9696 (70.72%), fixed cost was ₹3776 (27.54%) and selling and distribution cost was ₹ 239 (1.74 %). In Bajara farming, the average total cost or cost of sales was ₹ 3522. The share of variable cost in total cost or cost sales was 2491 (70.72%), fixed cost was ₹ 970 (27.54%) and selling and distribution cost was ₹ 61 (1.74 %). Productivity of kharif Bajara is 3.83 quintal per acre and farmers get averagely ₹ 1572 price per quintal at local market. Gross return of Bajara is ₹ 6520 per acre out of which ₹ 2583 (39.62%) is from sell of Bajara production and ₹ 3937 (60.38%) is from own consumption of Bajara by farmers. Net return of Bajara production is ₹ (-) 7192. It means that Bajara growers have a burden (loss) of ₹ 7192. The benefit-cost ratio of non-irrigated Bajara in sample area is 0.48. It means that farmers have invested rupee 1 in Bajara production but they bear 0.52 paise net loss per rupee. The minimum support price for Bajara crop was Rs. 2000 it was not sufficient to cover the cost of production. So it was suggested to government to increase the MSP of Bajara crop and it was also suggested to take all the costs into consideration while declaring MSP. It was suggested to farmers to increase the productivity of Bajara crops in area under study by using the high yield variety program means varieties of improved seeds, enhanced application of the fertilizers and extended use of pesticides etc. because productivity of Bajara crop was low in the area under study.

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