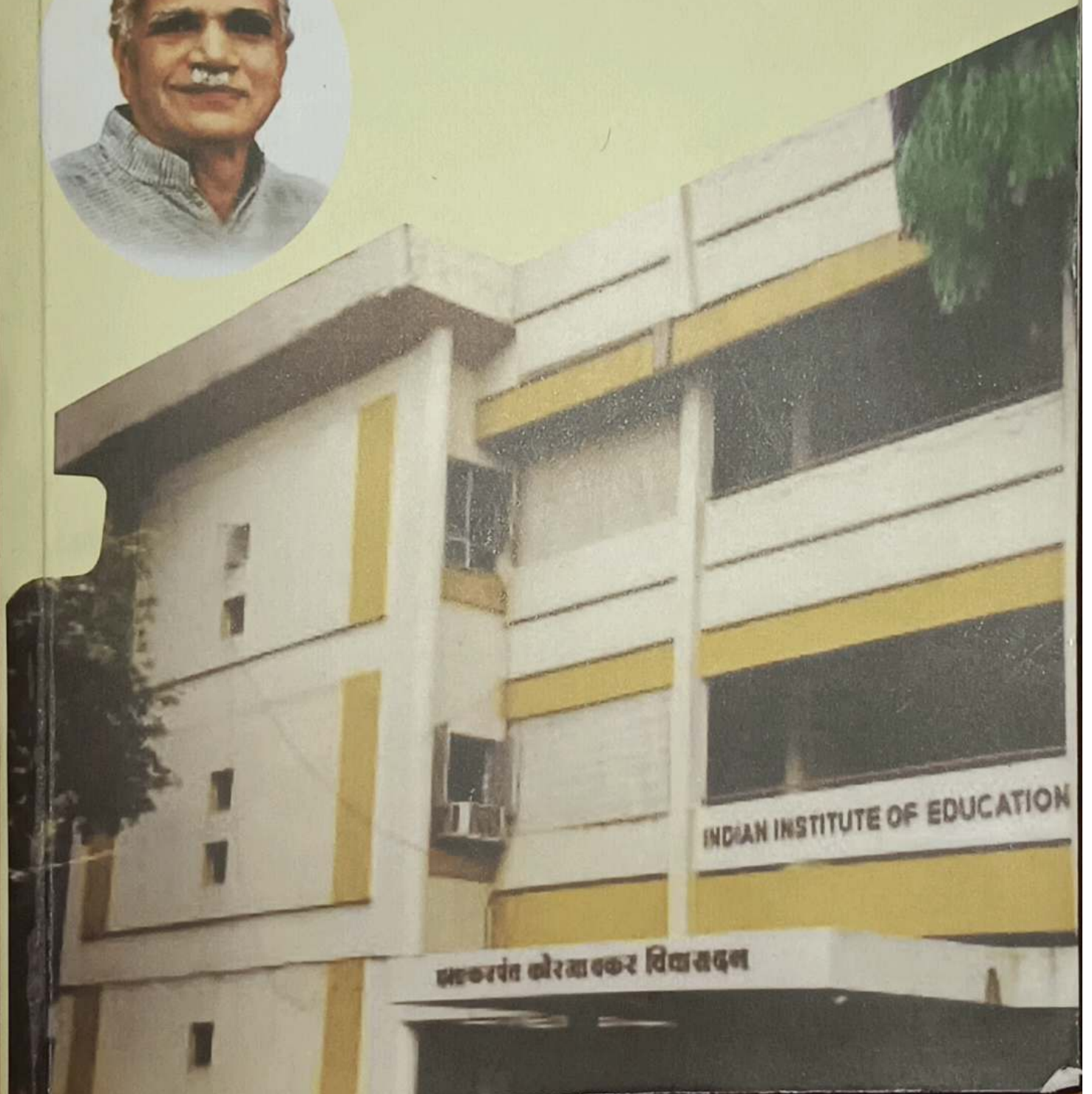
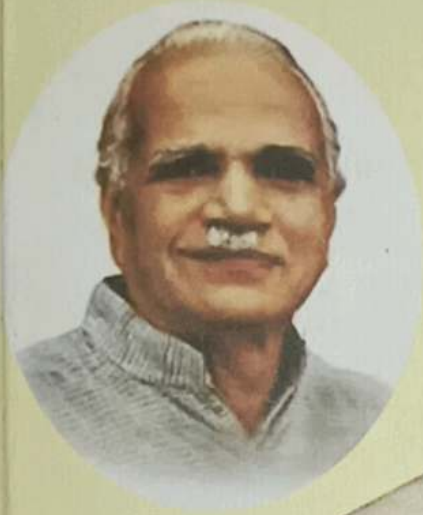


UGC CARE LISTED PERIODICAL
ISSN 2278-6864

शिक्षण आणि समाज Education and Society

Multidisciplinary Special Issue
September 2022
Part - II



Education and Society

Special Issue
UGC CARE LISTED PERIODICAL
ISSN 2278-6864

शिक्षण आणि समाज Education and Society

Since 1977

Multidisciplinary Special Issue
September 2022
Part - II

The Quarterly dedicated to the policy of "Education for Social
Development and Social Development through Education"



Indian Institute of Education

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

Education and Society

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'Shikshan ani Samaj' (Education & Society), the educational Quarterly is owned, printed and published by the Indian Institute of Education, Pune. It is printed at Pratima Offset, 1B, Devgiri Estate, S.No. 17/1B, Plot No. 14, Kothrud Industrial Area, Kothrud, Pune 411038 and Published at Indian Institute of Education, J.P. Naik Path, 128/2, Kothrud, Pune 411038. Editor: Dr. Jayasing N. Kalake

Opinions or views or statements and conclusions expressed in the articles which are published in this issue are personal of respective authors. The Editor, Editorial Board and Institution will not be responsible for the same in any way.

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Analysis of Cost and Pricing of Jawar 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 in production of Jawar. The study was based on the primary data of 50 Jawar cultivators for the year 2020-21. The average per acre cost of cultivation of Jawar was estimated to Rs. 15992 and per quintal cost was estimated to Rs 4026. Amongst the different items of cost, human labour cost and machine labour cost was the major components of operational or variable cost. Rental value of owned land is the major component of cost in case of fixed costs. The average production of Jawar was 4.02 quintal per acre. The minimum support price for Jawar was Rs. The gross returns obtained from Jawar crop were Rs. 11147 and Net Return was Rs. (-)4845 it means that Jawar growers have suffered a loss. The benefit-cost ratio of non-irrigated Jawar in sample area is 0.70. It means that farmers have invested 1 rupee in Jawar production but they bear 0.30 paise net loss per rupees.

1. Introduction:

Jawar is the most important food and fodder crop of dry land agriculture. Jawar is originated in India and Africa. This crop is raised in Kharif and Rabi season. Kharif Jawar was sown in the last week of June and Rabi Jawar sown in October to November. Maharashtra, Karnataka, Andhra Pradesh, Madhya Pradesh, Gujarat, Rajasthan, Uttar Pradesh and Tamil Nadu these are the major Jawar cultivating states in India. Jawar is one of the most important food crops in India. Jawar is used as human food in various forms. Jawar is also used as a cattle feed, poultry food and for other industrial uses. Duration of Jawar crop was 100 to 120 days.

Total Estimated area under Jawar crop was 4.48 million hectares, estimated production was 4.38 million tonnes and productivity was 977 kg per hectare. In Maharashtra total area under Jawar crop was 13.79 lakh hectares, production was 1807.51 thousand tonnes and productivity was 1235 kg per hectare. In Solapur district total area under Jawar crop was 36.48 hundred hectares, production was 9.23 hundred tonnes and productivity was 254.60 kg. per hectare. Solapur district is also one of the major Jawar producing districts in Maharashtra. Solapur district is known as the warehouse of the Jawar. In all the tehsils of Solapur district Jawar

was cultivated. The present investigation was attempted to study cost of cultivation of producing Jawar, pricing of Jawar, profitability of Jawar production and cost benefit ration of Jawar production in the study area.

2. Objectives Of The Study :

The main objective of study is to analyse the cost and pricing of Jawar with reference to dry land in Solapur district and specific objectives of the present study are as follows-

1. To analyse the cost of Jawar crop in the area under study.
2. To study the pricing of Jawar crop in area under study.
3. To study the profitability of Jawar crop in the area under study.
4. To estimate the benefit cost ratio of Jawar in study area.

3. Hypothesis

1. Jawar 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 Jawar crops farmer. So 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 tahsil. ePandharpur, Mangalweda, Malshiras, Madha, Karmala, Akkalkot, Barshi, Mohol, Sangola, Solapur North & Solapur South having maximum area under Jawar cultivation were selected. The study was based on primary data for the year 2020-21. Thus for present study 50 Kharif Jawar 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 Jawar producer. The farmers were also asked the major problems being faced by them in production of Jawar.

5. Result And Discussion:

1. Estimated Cost of Cultivation and Total Cost of Jawar (Sorghum) in Solapur District:

Table 1 Estimated Cost of Cultivation and Total Cost of Jawar in Solapur District (Per Acre)

Sr. No	Elements of cost	ATC	%	Min.	Max.	SD
1	Human Labour- Hired	1627	10.17	0	10000	1697
2	Human Labour- Family	3147	19.68	0	10400	2262
3	Bullock Labour - Hired	201	1.26	0	2250	505
4	Bullock Labour - Owned	0	0.00	0	0	0
5	Machine Labour - Hired	2157	13.49	0	4400	951
6	Machine Labour - Owned	0	0.00	0	0	0
7	Seeds	355	2.22	167	800	141
8	Fertilizer	557	3.48	0	3000	608
9	Manure	330	2.06	0	8000	1266
10	Insecticides	103	0.64	0	2000	431
11	Irrigation (Water + Electricity Charges)	370	2.31	0	2133	491
12	Crop Insurance	52	0.33	0	1733	251
13	Interest on Working Capital	249	1.56	122	660	99
14	Miscellaneous	23	0.14	0	100	21
I)	Operational Cost (1 to 14)	9171	57.35	4394	22760	3969
15	Rental Value of Owned Land	6027	37.69	2400	32000	4539
16	Rent Paid on Leased land	0	0.00	0	0	0
17	Land Revenue, Cesses & Taxes	39	0.25	0	500	95
18	Depreciation of Farm Builds & Implements	230	1.44	0	1600	233
19	Interest on Fixed Capital	199	1.24	67	1504	222
II)	Fixed Cost (15 to 19)	6496	40.62	2755	33722	4778
III)	Total Cost of Cultivation (I + II)	15667	97.96	7656	48722	7505
20	Packaging cost	130	0.81	20	2000	287
21	Transportation Cost	162	1.01	0	500	141
22	Sales Expenses in Market Committee	33	0.21	0	200	41
IV)	Selling and Distribution Cost (20 to 22)	326	2.04	20	2575	380
	Total Cost/ Cost of Sales (III + IV)	15992	100.00	7740	49222	7584

(Source: Field Survey)

Variable Cost/ Operational Cost of Jawar

In Jawar production hired human labour cost incurred was ₹ 1627 (10.17%) per acre, and family labour cost incurred was ₹ 3147 (19.68%) per acre. Hired Bullock labour cost incurred was ₹ 201 (1.26%) per acre, Hired machine labour cost incurred was ₹ 2157 (13.49%) per acre. Seeds cost incurred was ₹ 355 (2.22%) per acre for Jawar production. Fertilizer cost incurred was ₹ 557 (3.48%) per acre. In case of Jawar production manure cost incurred was ₹ 330 (2.06%) per acre. Insecticides cost incurred was ₹ 103 (0.64%) per acre. Irrigation cost incurred was ₹ 370 (2.31%) per acre which includes water and electricity charges. In Jawar production crop insurance cost incurred was ₹ 52 (0.33%) per acre. Interest on Working capital cost incurred was ₹ 249 (1.56%) per acre and miscellaneous cost incurred was ₹ 23 (0.14%) per acre in the sample study area. Average total operational or variable cost incurred was ₹ 9171.

Fixed Cost of Jawar

In fixed cost Rental value of owned land cost incurred was ₹ 6027 (37.69%) per acre in sample study area. Land revenue, cesses and taxes cost incurred was ₹ 39 (0.25%) per acre. Depreciation of farm builds and implements cost incurred was ₹ 230 (1.44%) per acre. Interest on fixed capital cost incurred was ₹ 199 (1.24%) per acre. Average total fixed cost incurred on Jawar cultivation was ₹ 6496 per acre which was 40.62% of total cost.

Total Cost of Cultivation of Jawar

The average total cost of cultivation of Jawar per acre was ₹ 15667 which was 97.96% of total cost or cost of sales. Out of total cost of cultivation operational cost was ₹ 9171 (57.35%) and fixed cost is 6496 (40.62%).

Selling and Distribution Cost of Jawar

The packaging cost incurred was ₹ 130 (0.81%) per acre. The transportation cost from farm to local market was ₹ 162 (1.01%) per acre. The average sales expenses in market committee have incurred ₹ 33 (0.21) per acre. Average total selling and distribution cost of Jawar was ₹ 326 (2.04%).

Total Cost /Cost of sales of Jawar

In Jawar farming, per acre average total cost or cost of sales was (total cost of cultivation + total marketing cost) was ₹ 15992. The share of variable cost in total cost or cost sales was ₹ 9171 (57.35%), fixed cost was ₹ 6496 (40.62%) and selling and distribution cost was ₹ 326 (2.04 %).

2. Estimated Cost of Production and Total Cost of Jawar (Sorghum) in Solapur District:

Table 2 Estimated Cost of Production and Total Cost of Jawar (Sorghum) in Solapur District (? Per Quintal)

Sr. No	Elements of cost	ATC	%	Min.	Max.	SD
1	Human Labour- Hired	410	10.17	0	1667	472
2	Human Labour- Family	792	19.68	0	3750	902
3	Bullock Labour - Hired	51	1.26	0	680	150
4	Bullock Labour - Owned	0	0.00	0	0	0
5	Machine Labour - Hired	543	13.49	0	2500	488
6	Machine Labour - Owned	0	0.00	0	0	0
7	Seeds	89	2.22	25	417	106
8	Fertilizer	140	3.48	0	600	157
9	Manure	83	2.06	0	1500	284
10	Insecticides	26	0.64	0	250	67
11	Irrigation (Water + Electricity Charges)	93	2.31	0	1100	191
12	Crop Insurance	13	0.33	0	520	77
13	Interest on Working Capital	63	1.56	24	250	54
14	Miscellaneous	6	0.14	0	40	7
I)	Operational Cost (1 to 14)	2309	57.35	926	8640	1870
15	Rental Value of Owned Land	1517	37.69	300	11250	1919
16	Rent Paid on Leased land	0	0.00	0	0	0
17	Land Revenue, Cesses & Taxes	10	0.25	0	120	23
18	Depreciation of Farm Builds & Implements	58	1.44	0	240	62
19	Interest on Fixed Capital	50	1.24	10	282	57
II)	Fixed Cost (15 to 19)	1635	40.62	366	11531	1976
III)	Total Cost of Cultivation (I + II)	3944	97.96	1293	20171	3651
20	Packaging cost	33	0.81	10	200	30
21	Transportation Cost	41	1.01	0	150	33
22	Sales Expenses in Market Committee	8	0.21	0	33	10
IV)	Selling and Distribution Cost (20 to 22)	82	2.04	20	258	49
	Total Cost/ Cost of Sales (III + IV)	4026	100.00	1336	20191	3639

(Source: Field Survey)

Variable Cost/ Operational Cost of Jawar

In Jawar production hired human labour cost incurred was ? 410

(10.17%) per quintal, and family labour cost incurred was ₹ 792 (19.68%) per quintal. Hired Bullock labour cost incurred was ₹ 51 (1.26%) per quintal. Hired machine labour cost incurred was ₹ 543 (13.49%) per quintal. Seed's cost incurred was ₹ 89 (2.22%) per quintal. Fertilizer cost incurred was ₹ 140 (3.48%) per quintal. In case of Jawar production manure cost incurred was ₹ 83 (2.06%) per quintal. Insecticide's cost incurred was ₹ 26 (0.64%) per quintal. Irrigation cost incurred was ₹ 93 (2.31%) per quintal. In Jawar production crop insurance cost incurred was ₹ 13 (0.33%) per quintal. Interest on Working capital cost incurred was ₹ 63 (1.56%) per quintal and miscellaneous cost incurred was ₹ 6 (0.14%) per quintal. The average total operational or variable cost incurred was ₹ 2309 (57.35%).

Fixed Cost of Jawar

Rental value of owned land cost incurred was ₹ 1517 (37.69%) per quintal. Land revenue, cesses and taxes cost incurred was ₹ 10 (0.25%) per quintal. Depreciation of farm builds and implements cost incurred was ₹ 58 (1.44%) per quintal. Interest on fixed capital cost incurred was ₹ 50 (1.24%) per quintal. The average total fixed cost of Jawar cultivation incurred was ₹ 1635 (40.62%).

Total Cost of Cultivation of Jawar

The average total cost of cultivation of Jawar was ₹ 3944. Out of total cost of cultivation operational cost was ₹ 2309 (57.35%) and fixed cost was ₹ 1635 (40.62%).

Selling and Distribution Cost of Jawar

The packaging cost incurred was ₹ 33 (0.81%) per quintal. The transportation cost was ₹ 41 (1.01%) per quintal. The average sales expenses in market committee incurred was ₹ 8 (0.21) per quintal. The average total selling and distribution cost of Jawar was ₹ 82 (2.04%).

Total Cost /Cost of sales of Jawar

In Jawar farming, the average total cost or cost of sales was (total cost of cultivation + total marketing cost) ₹ 4026. The share of variable cost in total cost or cost sales was ₹ 2309 (57.35%), fixed cost was ₹ 1635 (40.62%) and selling and distribution cost was ₹ 82 (2.04 %).

3. Gross Returns, Net Return and Benefit-Cost Ratio of Jawar (Sorghum):

Table 3 Gross Returns, Net Return and Benefit-Cost Ratio of Jawar (Sorghum)

			(₹ Per Acre)
Sr. No	Factor	Details	Returns
1	Gross Return	A) Own Consumption (in quintal)	1.65
		Price (in ₹)	2800
		Gross Return (output* price)	4626
		B) Production Sold (in quintal)	2.37
		Price (in ₹)	2756
		Gross Return (output* price)	6521
		C) Total Production A+B (in quintal)	4.02
		Gross Return (output* price) A+B	11147
2	Net Return	Total Cost of Production	15992
		Gross Return	11147
		Net Returns (gross return- total cost)	-4845
3	Benefit-Cost Ratio	Gross Return / Total Cost	0.70

(Source: Field Survey)

In case of Jawar farming, productivity of dry land Jawar is 4.02 quintal per acre and farmers get averagely ₹ 2756 price per quintal at local market. Out of total production own consumption of Jawar is 1.65 quintal per acre and production sold is 2.37 quintal per acre. Gross return of Jawar is ₹ 11147 out of which ₹ 6521 (58.50%) is from sell of Jawar production and ₹ 4626 (41.50%) is from own consumption of Jawar by farmers. Net return of Jawar production is ₹ (-) 4845. It means that Jawar growers have a burden (loss) of ₹ 4845. The benefit-cost ratio of non-irrigated Jawar in sample area is 0.70. It means that farmers have invested 1 rupee in Jawar production but they bear 0.30 rupee net loss per rupees.

4. Hypothesis Testing:

Researcher has formulated the hypotheses on the profitability of Jawar in area under study. This hypothesis is-

Jawar Crop is not profitable.

To study the hypothesis Jawar 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 Jawar Crop

Variable	Test value = 0						
	N	Mean	SD	SE Mean	95% Lower Bound	T	P
Jawar	50	-11075	15225	2153	-14685	-5.14	1

The above testing of hypothesis reveals that p value of Jawar crops is greater than the level of significance i.e. 0.05 hence it is concluded that the null hypothesis i.e. Jawar Crop is not profitable is accepted and the study rejects the alternative hypothesis i.e. Jawar Crop is profitable.

5. Conclusion:

In Jawar farming, per acre average total cost or cost of sales was ₹ 15992. The share of variable cost in total cost or cost sales was ₹ 9171 (57.35%), fixed cost was ₹ 6496 (40.62%) and selling and distribution cost was ₹ 326 (2.04 %). In Jawar farming, per quintal average total cost or cost of sales was ₹ 4026. The share of variable cost in total cost or cost sales was ₹ 2309 (57.35%), fixed cost was ₹ 1635 (40.62%) and selling and distribution cost was ₹ 82 (2.04 %). Productivity of dry land Jawar is 4.02 quintal per acre and farmers get averagely ₹ 2756 price per quintal at local market. Gross return of Jawar is ₹ 11147 out of which ₹ 6521 (58.50%) is from sell of Jawar production and ₹ 4626 (41.50%) is from own consumption of Jawar by farmers. Net return of Jawar production is ₹ (-) 4845. It means that Jawar growers have a burden (loss) of ₹ 4845. The benefit-cost ratio of non-irrigated Jawar in sample area is 0.70. It means that farmers have invested 1 rupee in Jawar production but they bear 0.30 paise net loss per rupees. The minimum support price for Jawar crop was Rs. 2550 it was not sufficient to cover the cost of production. So it was suggested to government to increase the MSP of Jawar 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 Jawar crops in area under study by using the high yield variety programme means varieties of improved seeds, enhanced application of the fertilizers and extended use of pesticides etc. because productivity of selected crops was low.

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