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Cost of Cultivation and Profitability of Agriculture in West Bengal: A Study with Special Reference to Backward Region of West Bengal

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ABSTRACT

Cost of cultivation is an important factor affecting the profitability of agriculture in West Bengal. We have considered here cost of production of six major crops, namely paddy, jute, mustard, potato, til and pulses. Cost of cultivation increased over the years for paddy, potato, jute, mustard, pulses and til. There occurred a decline in percentage of family labour cost (imputed) to total cost of cultivation. It reflects that family labourers are not interested in cultivation of these crops while being devoted to other means of economic livelihood and the cultivators depend more and more on casual labourers for cultivation of those crops. Percentages of fertilizers cost and rental value of owned land also registered increase during this period for these crops. The production cost and returns of different size of landholdings in different crops cultivation have been calculated based on field survey data in the backward region of Paschim Medinipur district. The farmers are getting relatively high net returns or profit from vegetables, mustard and potato cultivation and relatively low returns from paddy cultivation. Higher net income was the main driving force for shifting towards vegetables cultivation. Net return per unit of labour and unit cost of production has been compared with those of cereals and other crops. It was noted that most of the vegetables were more profitable than cereals and other crops.

Keywords: Cost of Cultivation, Net return, Size of landholdings

Agriculture is vital to India's economic development and is a mainstay for the livelihood of a large proportion of the population. Its forward and backward linkage effects not only contribute to the overall growth of the economy but also can reduce poverty and hunger by providing livelihood and food security. The analysis of cost is of pivotal importance in agriculture and it provides the apt information and essential knowledge to formulate and evolve the economic policies both at micro and macro levels (Murugan D. *et al*. 2005). Crop-wise information on costs and returns is required for the farmers to decide on allocation of their available limited resources. Cost of production is one of the most important factors in the determination of minimum support prices by government. It is a well established fact that the advent of new technology in agriculture has not only elevated the level of output, but also escalated the cost of input. It is imperative to observe that, in recent times farmers are becoming more capital investment conscious and entail risk as farm entrepreneurs for putting into practice more and more farm machineries (Gopalakrishna *et al*. 1985). Further for attaining a technological change, first of all the system of cultivation has assimilated to modern needs. By and large, the technological change accompanies an increase in the cost composition which varies from crop to crop, area to area and with land sizes. Thus the cost of cultivation is one of the important factors for the farmer's choice of crop cultivation (Gujrat *et al.* 2005).

Scope of growth in employment and earning from agriculture through the expansion of area under cultivation in the whole of India as well as in the

state of West Bengal has been significantly reduced after the nineteen seventies. The effects of Green Revolution technology on the yields of various crops also decreased significantly as the growth of yield of various crops reached a saturation level and simultaneously raised several environmental impacts after the nineteen eighties. Agricultural diversification construed in the sense of change in the cropping pattern towards high value crops is undoubtedly a major factor contributing towards agricultural development.

The adequate knowledge of cost structure of major crops has become essential for providing suitable incentives to the farmers and also assesses the relative competitiveness of respected season in the important vegetable growing states like West Bengal. In view of this, an attempt has been made in this paper to examine the cost of cultivation compare with other competing crops under different farm sizes at micro level that is at village level.

The Specific objectives of the study are given below:

(i) To estimate the cost of cultivation of six major crops in West Bengal and micro level of backward region of Paschim Medinipur district.

(ii) To estimate the value of yield of major crops in West Bengal and backward region of Paschim Medinipur district.

(iii) To estimate profitability of major crops in West Bengal.

(iv) To estimate profitability of major crops by farm size in backward region of Paschim Medinipur district.

Database and Methodology

The study is based on secondary and primary data. Primary data were collected from the households which were selected on the basis of multistage stratified random sampling. Paschim Medinipur district in West Bengal was purposely chosen for the present study for the field survey. All the blocks of Paschim Medinipur districts were not equally important. Four backward blocks from the district were selected.

Within a block all the villages are not equally important in respect of socio-economic characteristic. In view of this, four backward villages are selected from the village list of each block. Accordingly we have 16 selected backward villages. The socio-economic, soil and agricultural activities of these 16 sample villages are distinct from each other. 20 households were selected randomly from each village. From the above sample design 320 households were selected for detailed survey. Reference period for the study is the financial year 2015-16.

Cost and Profit Measurement

Several inputs have been included in the calculation of a crop cost of production. Broadly these costs are classified into two categories such as:

- **Cost-A:** (Variable cost/Operational cost): it includes the cost of human labour, Bullock labour, Machine labour cost of seeds/plants (included farm produced and purchased), insecticides and pesticides, manure (owned and purchased), fertilizers, Irrigation charges, (owned and purchased) Interest on working capital, and Miscellaneous cost— which have not come under main category.
- **Cost-B:** (Fixed cost): Rental value of owned land, Land revenue, Depreciation on implements and farm buildings, Interest on fixed capital.
- **Cost-C:** Total cost of Production (Cost A+ Cost B).

The profitability may be calculated by using various economic formulas:

Value of Yield = (Main Product × Price per unit) + (By Product × Price) per hectare

Gross Profit per hectare = Value of yield - Cost C + Rental value of owned land + value of owned labour

Net Profit per hectare = Value of yield – Total cost of production

Input-Output Ratio = Value of Yield/ Cost C

RESULTS AND DISCUSSION

Cost of Cultivation

We have considered here cost of production of six major crops, namely paddy, jute, mustard, potato, til and pulses. Cost of cultivation increased over the years for paddy, potato and other crops cultivation.

Table 1: Cost of Cultivation of Paddy and Potato in West Bengal, 2001-2 to 2013-14 (₹/ha)

Operational Cost		Paddy					Potato				
		2001-02	**2003-04**	**2005-06**	**2009-10**	**2013-14**	**2001-02**	**2003-04**	**2005-06**	**2009-10**	**2013-14**
	Family Labour	**5002**	5324	3880	6263	9451	5228	6080	4090	6098	11902
	Casual Labour	3734	4406	6206	8982	20214	6158	5670	7971	10182	22935
	Hired Animal Labour	208	252	210	203	406	316	250.2	186	38	480
	Own Animal .Labour	2464	2322	1780	2246	1832	1617	2151	804	1595	1480
	Hired Machine Labour	490	751	733	1233	3025	1663	1442	1865	1330	4250
	Own Machine .Labour	2.32	3.06	44	98	70.3	23.64	12.39	97	574	384
	Seed	650	707	667	1037	1663	11202	13088	14850	29563	27878
	Fertilizer	1263	1390	1615	2195	4125	7337	8180	9180	8610	21214
	Manure	602	340	512	702	468	767	502	2057	2382	6251
	Pesticides	284	199	263	388	880	965	522	4090	1121	2518
	Irrigation	927	1373	984	1380	737	2899	2186	1733	2354	4152
	Interest on W. Capital	335	368	395	723	970	1030	1066	1220	1623	2150
Fixed Costs	Rental Value of Owned Land	4559	5077	5908	10332	14900	16020	16450	21172	15650	36627
	Interest on Fixed Capital	654	1013	952	1102	1325	556.5	550	785	1162	1875
	Others	308	535	460	516	687	145	230	324	421	574
Total Cost		**21482**	**24060**	**24609**	**37400**	**60753**	**55927**	**58379**	**70424**	**82703**	**144670**

Source: *Ministry of Agriculture Govt. of India, 2007,2011, 2013-14.*

In paddy, cost of cultivation per hectare increased from rupees (₹) 21482 to ₹ 60753 during 2001-02 to 2013-14 while in potato increased from ₹ 55927 to ₹ 144670. Cost of seeds per hectare of area under potato cultivation was highest among the six sample crops. Seeds cost per hectare for potato cultivation had sharp increase from ₹ 11202 in 2001-2 to ₹ 27878 in 2013-14 (Table 1).

There occurred a decline in percentage of family labour cost (imputed) to total cost of cultivation from 23.28 to 15.56 percent per hectare of area and a sharp increase in that of casual labour cost from 17.38 to 33.27 percent in case of paddy and the same decline in percentage of family labour cost (imputed) to total cost of cultivation from 9.35 to 8.23 percent and sharp increase in that of casual labour cost from 11.01 to 15.85 percent in case of potato during 2001-02 to 2013-14. All this reflected that family labourers are not interested in cultivation of these crops while being devoted to other means of economic livelihood and the cultivators depend more and more on casual labourers for cultivation of those crops. Percentages of fertilizers cost and rental value of owned land also registered increase during this period for these crops (Table 2).

Similar conditions prevailed in case of mustard, jute, til and pulses for which casual labour cost constituted the highest proportion of total cost of cultivation as in paddy. From Table 3 we observe that the cost of cultivation per hectare of jute is higher than that of mustard. The cost of cultivation per hectare of jute increased from ₹ 23641 in 2001-2 to ₹ 61687 in 2013-14 while that of mustard increased from ₹ 12979 to ₹ 39215. Labour cost of jute cultivation is higher than that of mustard cultivation. But fertilizer and seeds cost of jute cultivation is lower than that of mustard cultivation. Cost of cultivation per hectare of Til is higher than that of pulses. The cost of cultivation per hectare of til increased from ₹ 13980 in 2001-2 to ₹ 36298

Table 2: Cost of Cultivation (% share) of Paddy and Potato in West Bengal, 2001-2 to 2013-14 (₹/ha)

		Paddy					Potato				
Average		2001-2	2003-4	2005-6	2009-10	2013-14	2001-2	2003-4	2005-6	2009-10	2013-14
Operational Cost	Family Labour	23.28	22.13	15.77	16.75	15.56	9.35	10.41	5.81	7.37	8.23
	Casual Labour	17.38	18.31	25.22	24.02	33.27	11.01	9.71	11.32	12.31	15.85
	Hired Animal Labour	0.97	1.05	0.85	0.54	0.67	0.57	0.43	0.26	0.05	0.33
	Own Animal Labour	11.47	9.65	7.23	6.01	3.02	2.89	3.68	1.14	1.93	1.02
	Hired Machine Labour	2.28	3.12	2.98	3.30	4.98	2.97	2.47	2.65	1.61	2.94
	Own Machine Labour	0.01	0.01	0.18	0.26	0.12	0.04	0.02	0.14	0.69	0.27
	Seed	3.03	2.94	2.71	2.77	2.74	20.03	22.42	21.09	35.75	19.27
	Fertilizer	5.88	5.78	6.56	5.87	6.79	13.12	14.01	13.04	10.41	14.66
	Manure	2.80	1.41	2.08	1.88	0.77	1.37	0.86	2.92	2.88	4.32
	Pesticides	1.32	0.83	1.07	1.04	1.45	1.73	0.89	5.81	1.36	1.74
	Irrigation	4.32	5.71	4.00	3.69	1.21	5.18	3.74	2.46	2.85	2.87
	Interest on W. Capital	1.56	1.53	1.61	1.93	1.60	1.84	1.83	1.73	1.96	1.49
Average Fixed Costs	Rental Value of Owned Land	21.22	21.10	24.01	27.63	24.53	28.64	28.18	30.06	18.92	25.32
	Interest on Fixed Capital	3.04	4.21	3.87	2.95	2.18	1.00	0.94	1.11	1.41	1.30
	Others	1.43	2.22	1.87	1.38	1.13	0.26	0.39	0.46	0.51	0.40
	Average Total Cost	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: *Govt. of India (2007, 2011, 2014).*

Table 3: Cost of Cultivation of Mustard, Jute, Til and Pulses in West Bengal, 2001-2 to 2013-14

		Mustard		Jute		Til		Pulses	
Operational Costs		2001-2	2013-14	2001-2	2013-14	2005-06	2013-14	2005-06	2013-14
	Family Labour	2539	6405	4162	10485	2456	5999	2283	6302
	Casual Labour	1800	9435	4690	23903	2261	11059	1795	7191
	Hired Animal Labour	392	580	454	561	278	604	2074	986
	Own Animal Labour	1303	1322	1943	829	1795	1593	890	1807
	Hired Machine Labour	612	1846	294	1770	228	1351	635	2397
	Own Machine Labour	0.20	36.30	0.10	29.50	10	65	36	50
	Seed	171	451	312	612	168	558	768	2484
	Fertilizer	1302	4712	892	3569	1021	2978	476	1432
	Manure	212	254	344	271	180	57	42	0
	Pesticides	65.75	288	173.6	475	2	247	5	47
	Irrigation	827	1746	310	1558	1020	1383	69	79
	Interest on W. Capital	213	435	294	489	265	346	135	317
Fixed Costs	Rental Value of Owned Land	2829	10453	4868	16035	3830	9450	4545	9644
	Interest on Fixed Capital	507	895	539	723	286	358	215	386
	Others	206	357	270	378	190	250	170	230
Total Cost		**12979**	**39215**	**19545.7**	**61687.50**	**13980**	**36298**	**14138**	**33352**

Source: *Govt. of India (2007, 2011, 2014).*

in 2013-14 while that of pulses increased from ₹ 14138 to ₹ 33352/. The labour and fertilizer cost of til cultivation is higher than that of pulses cultivation. But seeds cost of pulses cultivation is higher than that of til cultivation.

Gross and Net Return/ Profit Per Hectare

The decision of a farmer in choosing cropping pattern depends on net return and not simply on the price of the crop. *Economic Survey* of 1985-86 revealed that farmer's behavior was guided by net

revenue or comparative revenue rather than yield. The study put forward the clash between cropping pattern under optimum use of land, based on comparative advantage and cropping pattern for the balance between domestic demand and supply. The study repeatedly argued that the most crucial issue for Indian agriculture was the rising unit cost of production of almost all crops (Dantwala, 1986).

The production cost and profit on different crops per hectare cultivation are presented in the Table 4. Net profit per hectare increased over years for til, mustard and pulses cultivation, but in paddy cultivation the farmers earn negative profit; so farmers are not interested in cultivating paddy. In potato cultivation the net profit fluctuates over years because the market price of potato is not stable over years. Gross profit per hectare of all the sample crops is positive during 2001-2 to 2013-14. In 2013-14 it was highest in potato (₹ 60191), followed by jute (₹ 30153), paddy (₹ 26485), pulses (₹ 23069),

Table 4: Gross and Net Profit Rate (per hectare) in Paddy, Mustard Oil, Potato and Jute Crops in West Bengal, 2001-2 to 2013-14

Crop		Value of product (₹./ha)	Cost of production (₹/ha)	Gross Profit	Net Profit	Gross Profit rate (%)	Net Profit rate (%)
Paddy	2001-2	18501	21482	9044	-2981	42.10	- 13.87
	2002-3	18764	23956	7434	-5192	31.04	- 21.67
	2003-4	21085	24060	9751	-2975	40.52	- 12.36
	2005-6	23793	24609	11404	- 816	46.34	-3.58
	2009-10	42376	37400	24797	4976	66.28	13.30
	2012-13	52703	54398	23178	- 1695	43.40	-3.18
	2013-14	60985	60753	26485	232	43.59	0.38
Mustard	2001-2	11449	12978	5142	-1529	39.62	- 11.78
	2002-3	16128	15274	9264	854	60.65	5.59
	2003-4	19550	16184	13005	3366	80.35	20.80
	2005-6	16857	16261	9178	596	56.45	3.67
	2009-10	25376	22987	15280	2390	66.47	10.40
	2012-13	45813	38291	28254	9001	73.78	23.50
	2013-14	42273	39215	21274	3058	54.24	7.80
Potato	2001-2	64080	55927	31041	8153	55.56	14.57
	2002-3	37259	49717	3181	-12458	6.40	- 25.05
	2003-4	69423	58379	35737	11044	61.22	18.91
	2005-6	85226	70424	41446	14802	58.65	21.02
	2009-10	65525	82703	9093	- 17177	10.99	- 20.76
	2012-13	121091	119622	44575	1469	37.26	1.23
	2013-14	154468	144670	60191	9798	41.60	6.78
Jute	2001-2	19475	19545	10903	- 70	55.78	-0.35
	2002-3	22155	23641	10771	- 1486	45.56	- 6.28
	2003-4	19643	23607	7816	- 3964	33.10	- 16.79
	2009-10	53399	37334	38117	16065	102.09	43.03
	2012-13	62820	61963	30449	857	50.77	1.38
	2013-14	64462	61687	30153	2775	48.87	4.49
Til	2005-6	15316	13890	10054	1336	74.71	9.94
	2009-10	23574	19911	16168	3663	81.20	18.39
	2012-13	33840	31860	17572	1980	55.16	6.22
	2013-14	37814	36298	19590	1516	53.96	4.18
Pulses (Lentil, Masur)	2005-6	16186	14138	9937	2048	70.28	14.48
	2009-10	37134	24398	24663	12736	101.08	52.20
	2012-13	32637	29621	18405	3016	62.13	10.18
	2013-14	38575	33352	23069	5223	69.16	15.65

Source: *Same as in Table 3.*

mustard (₹ 21274), til (₹ 19590). The net profit rate in mustard and pulses cultivation was higher than that in paddy and potato cultivation in 2013-14. The net profit per hectare for mustard increased from ₹ 854 in 2002-3 to ₹ 3058 in 2013-14 while that in pulses cultivation increased from ₹ 2048 in 2005-6 to ₹ 5223 in 2013-14.

Both value of product and cost of production of different major crops in West Bengal recorded upward trend during 2001-02 to 2013-14. The value of output per hectare of potato is highest (₹ 154468) in 2013-14 while the value of output per hectare of til is lowest (₹ 37814) (Table 4). Gross profit and net profit as well as their rates fluctuated over the years and net profit and its rate registered negative in some crops like paddy, mustard, potato and jute for some years. Mean net profit is estimated to be negative for paddy (₹ -1207.29) during 2001-02 to 2013-14. Percentage of GCA under paddy registered decline during this period. These percentages under mustard, potato, til and pulses recorded increases and that under jute remained more or less constant varying marginally between 6 and 7 per cent. Mean gross profit over the years from 2001-02 to 2013-14 recorded the highest (₹ 32180.57) for potato followed by jute (₹ 21368.17) (Table 5).

Farmers appear to be guided most by mean gross profit and its rate and not so much by net profit and its rate in their decision-making for acreage allocation under different crops. High percentage of GCA under paddy (above 56 per cent) seems to be influenced by the demand conditions – farmers' dire needs to meet their urgent consumption demand, i.e., mostly by their subsistence requirements.

Micro Level Study

Per Acre Cost and Returns in Paddy and Potato Cultivation

The production cost and returns of different sizes of landholdings in potato and paddy cultivation have been presented in Table 6. Total output value has been calculated on the basis of local village market prices. Productivity of small and marginal farmers

Table 5: Mean Gross and Net Profit in Major Crops in West Bengal

Crops	Mean gross profit	Mean net profit	Mean gross profit rate%	Mean net profit rate%
Paddy*	16013.29	-1207.29	44.75	-5.85
Mustard*	14485.29	2533.71	61.65	8.57
Potato*	32180.57	2233.00	38.81	2.39
Jute**	21368.17	2362.83	56.03	4.25
Til***	15846.00	2123.75	66.26	9.68
Pulses***	19018.50	5755.75	75.66	23.13

Notes: ** figures for seven years, ** figures for six years, ***figures for four years.*

Table 6: Cost and Returns Per Acre in Paddy and Potato Cultivation by Farm Size

Cost/Size of Holdings	Paddy				Potato			
	Small & Marginal	Semi-Medium	Medium	All size	Small & Marginal	Semi-Medium	Medium	All size
Total Operational Cost (A)	20515	20240	20030	20214	40617	40584	40161	40334
Total Fixed Cost (B)	6125	6015	5840	5975	15750	15542	15424	15461
Total Cost of Production (C)	26640	26255	25870	26189	56367	56126	55585	55795
Productivity (Kg)	1890	1850	1810	1835	14875	14810	14645	14725
Price Received	28350	27750	27150	27525	89250	88860	87870	88350
Gross Return	28350	27750	27150	27525	89250	88860	87870	88350
Net return over cost A	7835	7510	7120	7311	48633	48276	47709	48016
Net Return over cost C	1710	1495	1280	1336	32883	32734	32285	32555
Input- Output ratio over cost A	1.38	1.37	1.36	1.36	2.20	2.19	2.18	2.19
Input- Output ratio over cost C	1.061	1.057	1.049	1.051	1.584	1.583	1.580	1.583

Source: *Field Level Survey.*

Table 7: Cost Structure and Returns per Acre in Til and Cauliflower Cultivation, 2015-16

Cost/Size of Holdings	Oil Seeds (Til)				Vegetables (Cauli flower			
	Small & Marginal	Semi-Medium	Medium	All size	Small & Marginal	Semi-Medium	Medium	All size
Total Operational Cost (A)	11046	10965	10582	10724	33015	32842	32270	32674
Total Fixed Cost(B)	4672	4587	4275	4491	16993	16815	16305	16635
Total Cost of Production(C)	15718	15552	14857	15215	50008	49657	48575	49309
Productivity (Kg)	485	470	450	464	8950	8775	8550	8655
Gross Return	19400	18800	18000	18560	80550	78975	76950	77895
Net return over cost A	8354	7835	7418	7836	47535	46133	44680	45221
Net Return over cost C	3682	3248	3143	3345	30542	29318	28375	28586
Input- Output ratio over cost A	1.75	1.71	1.70	1.73	2.37	2.40	2.38	2.38
Input- Output ratio over cost C	1.23	1.21	1.21	1.22	1.61	1.59	1.584	1.583

Source: *Field Level Survey.*

is higher than that of medium farmers. Small and marginal farmers are getting higher returns than semi-medium and medium farmers. The farmers are getting relatively high net returns from potato cultivation and relatively low returns from paddy cultivation. The costs of production and net return are different for different farm sizes. It is observed that per acre production cost (₹ 55795/-) is highest in potato cultivation. Similarly net return per acre in potato cultivation is higher than that in paddy cultivation. Net return per acre in paddy cultivation is only ₹ 1336 while net return per acre in potato cultivation is ₹ 32555.

Cost and Returns Per Acre in Til and Cauliflower Cultivation

Similarly, productivity of small and marginal farmers is estimated to be higher than medium farmers. Small and marginal farmers are getting higher returns than semi-medium and medium farmers. The farmers are getting relatively high net returns from cauliflower cultivation and relatively low returns from til cultivation. Costs of production and net returns are different for different farm sizes. It is observed that per acre total production cost (₹ 49309) is higher in cauliflower cultivation and net return per acre in this crop is also higher than that in til cultivation. Net return per acre in Til cultivation is only ₹ 3345 while that in cauliflower is ₹ 28586. Input-output ratio for cauliflower cultivation is 1.58 while 1.22 in Til (Table 7).

Cost and Returns Per Acre in Mustard and Pulses (Mug) Cultivation

Similarly, productivity of mustard and mug cultivation for small and marginal farmers is higher than that for medium farmers. Small and marginal farmers are getting higher returns than semi-medium and medium farmers. The farmers are getting relatively high net returns from mustard cultivation and relatively low returns from mug cultivation. It is observed that the cost of production per acre is ₹ 16348 in mustard cultivation while ₹ 14887 in mug. Net return per acre in mustard cultivation is higher than that in mug cultivation. Net return per acre in mug cultivation is only ₹ 2689 while that in mustard cultivation is ₹ 6428. Input-output ratio for mustard cultivation is 1.39 whereas 1.18 in mug cultivation (Table 8).

Unit Cost of Production and Net Returns Per Unit of Labour by Farm Size

Vegetable cultivation in the study area was improved in the 1990s due to the improved road connectivity and rising demand for vegetables. Higher net income was the main driving force for shifting towards vegetables cultivation. Net return per unit of labour and unit cost of production has been compared with those of cereals and other crops (Table 9). It was noted that most of the vegetables were more profitable than cereals and other crops. The net return per unit of labour is higher for potato

Table 8: Cost and Returns Per Acre in Mustard and Pulses(Mug) Cultivation

Cost/Size of Holdings	Oil Seeds (Mustard)				Pulses (Mug)			
	Small & Marginal	Semi-Medium	Medium	All size	Small & Marginal	Semi-Medium	Medium	All size
Total Operational Cost (A)	12495	11873	11045	11548	10926	10113	9923	10128
Total Fixed Cost (B)	5212	5014	4654	4800	4963	4810	4638	4759
Total Cost of Production (C)	17707	16887	15699	16348	15889	14923	14561	14887
Productivity (Kg)	645	540	500	584	362	325	305	338
Gross Return	25155	21060	19500	22776	18824	16900	15860	17576
Net return over cost A	12660	9187	8455	11228	7898	6787	5937	7448
Net Return over cost C	7448	4173	3801	6428	2935	1977	1299	2689
Input- Output ratio over cost A	2.01	1.78	1.69	1.97	1.72	1.67	1.59	1.73
Input- Output ratio over cost C	1.42	1.25	1.24	1.39	1.19	1.13	1.09	1.18

Source: Field Level Survey.

Table 9: Net Returns Per Unit of Labour by Farm Size

Crops	Small & Marginal	Semi-Medium	Medium	All Size
Paddy	23.32	21.56	19.50	19.37
Potato	416.24	432.58	440.24	422.79
Pulses (mug)	93.68	67.23	45.30	89.63
Til	126.96	126.52	125.72	126.11
Mustard	251.03	154.74	148.30	232.31
Cauliflower	418.38	422.87	423.50	408.37

Source: *Field Level Survey.*

(₹ 422.79) and cauliflower (₹ 408.37) cultivation while paddy (₹ 19.37) and pulses (₹ 89.63) is lowest. In the winter season vegetables like cauliflower, potato and brinjal were more profitable than paddy and pulses. Since vegetables have shorter duration than cereals, net profit was also computed. Small and marginal farmers preferred cultivating short duration crops to realize quick returns (Joshi, 2006). The net return over cost on per mandays basis was considerably higher from vegetables and potato than that from cereals. In the case of medium size farmers the net return per manday is higher from potato and vegetables than that for small and marginal farmers. But in case of small and marginal farmers the gross return or net return is higher than that for medium farmers.

CONCLUSION

This study found that the potato and Cauliflower are more profitable crops than the paddy. In all the Villages an inverse relationship has been found between the size of holding and cost of production in all crops cultivation. At the end it can be concluded that the cultivation of potato and Cauliflower is more lucrative than the paddy cultivation in the selected villages. There is increasing percentage of casual labour cost to total cost for major crops in the state while there is declining percentage of family labour cost. Gross profits per hectare of cropped area are positive for all major crops and it was highest in potato, followed by jute, paddy, pulses, mustard and til. Net profit per hectare increased over years for til, mustard and pulses cultivation, but in paddy cultivation the farmers face negative profit for some years; so farmers are not much interested to cultivate paddy. In potato cultivation the net profit fluctuates over years because the market price of potato was not stable. The percentage of net profit in mustard and pulses cultivation is higher than that in paddy and potato cultivation.

Higher net income has been the main driving force for shifting to cultivation of vegetables which are more profitable than cereals and other crops. The net return per unit of labour is higher for potato and cauliflower cultivation. In the winter season

most of the vegetables like cauliflower, potato and brinjal are more profitable then paddy and wheat. Since vegetables have shorter duration than cereals, the higher net profit is secured. Small and marginal farmers prefer cultivating short duration crops to realize quick returns. The net return over cost on per mandays basis has been considerably higher from vegetables and potato than from cereals. In the case of medium size holders the net return per manday is higher for potato and vegetables than that for small and marginal holders. But for small and marginal farmers gross return or net return is higher than that for medium farmers. Small holders of land are more efficient in cultivation of potato, cauliflower, paddy, mustard and pulses.

Suggestion

(i) Cost of cultivation can be substantially reduced by means of increasing use of domestic manures and organic treatment of plants.

(ii) Cost of fertilizers and pesticides may be reduced by reducing indirect tax on those items.

(iii) Crop diversification in favour of high value crops like vegetables and fruits will improve the yield rate and thereby the returns of farmers over the cost of production.

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