



## **Economic Evaluation of Farm Pond Beneficiary and Non-beneficiary Farmers for Red Gram in Mangrulpir Tahasil**

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### **ABSTRACT**

*The present study was undertaken to examine the impact of farm ponds on production of major crops. For the present study, 50 beneficiary farmers having farm ponds and 50 non-beneficiary farmers without farm ponds on their field were selected from Mangrulpir tahasil of Washim district. 10 villages from Mangrulpir tahasil were selected purposively and, from each village sufficient samples of beneficiary and non-beneficiary farmers were taken randomly for comparison. The selected farmers were classified into three categories viz., small, medium, large according to their land holding. The primary data was collected from the farmers by survey method and standard cost concepts i.e., cost 'A', cost 'B' and cost 'C' was used for the analysis of data. It is revealed from the study that in beneficiary farmers at overall level average gross returns was ₹ 69084.55, while in case of non-beneficiary farmers it was ₹ 61270.34. In beneficiary farmers at overall level the output-input ratio at cost 'C' was 1.61, while in case of non-beneficiary farmers it was 1.50. It shows that the beneficiary farmers were more profitable than non-beneficiary farmers.*

**Keywords:** Beneficiary, Non-beneficiary, Farm ponds, Soybean, Returns, Output- input ratio.

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### **INTRODUCTION**

The present study was restricted to Washim district only in Vidarbha region. The 50 beneficiary and 50 non-beneficiary farmers were selected from Mangrulpir tahasil randomly in Washim district. Primary data were collected representing almost all representative area up to village level in the district for the year 2016-2017 [1-3]. The primary data on input utilization, cost of cultivation and returns were collected from the selected beneficiary and nonbeneficiary farmers and other relevant information was collected through the survey method with the help of pretested schedules. The village wise data so collected for cost of cultivation and returns were compiled for the whole district [4-8]. This study was undertaken with main object of determining input used, costs, returns, and profitability from Soybean production.

### **MATERIAL AND METHODS**

The present study was restricted to Washim district only in Vidarbha region. The 50 beneficiary and 50 non-beneficiary farmers were selected from Mangrulpir tahasil randomly in Washim district. Primary data were collected representing almost all representative area up to village level in the district for the year 2016-2017. The primary data on input utilization, cost of cultivation and returns were collected from the selected beneficiary and nonbeneficiary farmers and other relevant information was collected through the survey method with the help of pretested schedules. The village wise data so collected for cost of cultivation and returns were compiled for the whole district. For studying the impact of farm ponds on farmers economy on production of soybean the standard cost concept i.e. Cost 'A', Cost 'B' and Cost 'C' were used. The analytical part of the research was mainly confined to: Estimation of per hectare Cost 'A', Cost 'B', and Cost 'C'. Per hectare net returns at Cost 'A', Cost 'B', and Cost 'C'. This study was undertaken with main object of determining input used, costs, returns, and profitability from Soybean production [6-8].

For studying the impact of farm ponds on farmers economy on production of soybean the standard cost concept i.e. Cost 'A', Cost 'B' and Cost 'C' were used. The analytical part of the research was mainly confined to:

- Estimation of per hectare Cost 'A', and Cost 'C'.
- Per hectare net returns at Cost 'A', Cost 'B', and Cost 'C'.

$$\text{Output-input Ratio} = \frac{\text{Gross Income}}{\text{Respective Cost}}$$

The present study was undertaken with main object of determining inputs used, cost, returns, profitability and resource use efficiency from gram production.

#### **Cost 'A'**

It is actual paid out cost by the cultivators. This cost approximates the expenditure incurred by the farmers in cash and kind in the cultivation of crop and include the following items.

- i. Hired human labour
- ii. Bullock labour
- iii. Machinery hours
- iv. Seed
- v. Irrigation charges
- vi. Land revenue and other cases
- vii. Depreciation
- viii. Interest on working capital

#### **Cost 'B'**

Cost 'B' was estimated by adding interest on fixed capital and rental value of land to Cost 'A' i.e.

Cost 'B' = Cost 'A' + Rental value of owned land + Interest on owned fixed capital (excluding land) @ 10%

#### **Cost 'C'**

It is obtained by adding imputed value of family labour to cost 'B'

Cost 'C' = Cost 'B' + Imputed value of family labour

**Gross income:** It is calculated as under,

Gross value of output = value of main produce + value of by-produce

Net Income:

Gross value of output - Cost 'C'

Input-Output Ratio: it is ratio between the value of gross output and the cost of cultivation at different cost concept

## **RESULTS**

The findings of the present study as well as relevant discussion have been presented under following heads.

#### **Per hectare input utilization of Red Gram:**

The degree of management of the resources can be judged for the utilization of resources, the choice and the decision-making. Beside this, it also indicates the level of technology adopted by the farmers. The farmers required to spend on various inputs like seed, manures, fertilizers, human labour, bullock labour and machinery labour etc. Therefore, it is necessary to know the pattern of expenditure on various inputs on per hectare basis. It is observed from table 1 reveals that at overall level hired human labour was used more in Non-beneficiary farmers as compared to the beneficiary farmers and all other inputs were used more in beneficiary farmers than non-beneficiary farmers.

#### **Per hectare costs of cultivation of tur of beneficiary and non-beneficiary farmers**

The share of each items to the total cost i.e. cost 'C' for Tur cultivation. The cost has determined on the basis of standard cost concept i.e. cost 'A', cost 'B', cost 'C', the different cost concept have different utilities in research. Thus, attempt has been made to estimate the cultivation costs of Tur crop of beneficiary and non-beneficiary farmers in the study area and presented in succeeding table.

In case of beneficiary farmer per hectare cost of cultivation of tur crop for the sample at overall level was ₹42779.19. The per hectare total costs of cultivation i.e. cost 'C' of ₹ 41779.20 in large size group, ₹42182.90 in medium size group and ₹43941 for small size group of farmers, respectively. In case of beneficiary farmers, the per hectare cost of cultivation at overall level i.e. cost 'A' and cost 'B' was ₹25745.00 and ₹38499.91 respectively which was 60.18 percent and 90.00 per cent of the total cost i.e. cost 'C'. In case beneficiary farmers of small, medium, large and at overall level share of hired human labour (male + female) to total cost i.e. at cost 'C' accounted 18.25 per cent, 17.47 per cent, 18.52 per cent

and 17.96 per cent, respectively. The human labour used in various farm operations like ploughing, harrowing, sowing, hoeing, weeding, harvesting etc. Bullock labour in case of small, medium, large and at overall level 6.40 per cent, 5.96 per cent, per cent, 6.36 per cent and 6.18 respectively. Bullock labour used in the farm operation like ploughing, harrowing, hoeing and transport the farm produce from field to farmhouse.

**Table: 1 Per hectare input utilization of tur crop of beneficiary and non-beneficiary farmers. (Per ha.)**

Sr. No.	Particulars	Physical quantity								
		Unit	Small		Medium		Large		Overall	
			B	NB	B	NB	B	NB	B	NB
1	Hired human labour									
	Male	Days	21.25	19.96	18.82	21.21	20.51	21.05	20.15	20.88
	Female		25.13	22.50	24.04	25.11	24.24	24.23	24.36	24.76
	<b>Total</b>		46.38	42.46	42.86	46.32	44.75	45.28	44.51	45.64
2	Bullock labour	Days	5.63	3.96	5.03	5.13	5.31	5.31	5.29	4.59
3	Machinery	Hrs.	5.13	3.54	4.91	4.81	4.89	4.89	4.94	4.37
4	Seed	Kg	11.75	12.13	12.14	12.46	12.36	12.36	12.17	12.34
5	Manure	Qtl.	4.38	4.17	4.63	5.07	4.82	4.82	4.67	4.93
6	Fertilizer									
	N	Kg.	24.00	23.33	22.50	22.71	22.48	22.48	22.93	22.72
	P	Kg.	41.88	40.88	46.14	45.60	45.69	45.69	45.06	44.70
	K	Kg	21.63	22.21	23.00	22.73	22.65	22.65	22.55	22.58
	<b>Total</b>		87.51	86.42	91.64	91.04	90.82	90.82	90.54	90
7	Family labour									
	Male	Days	12.25	10.96	11.35	11.22	11.18	11.18	11.44	11.10
	Female	Days	14.13	11.75	13.22	13.09	12.96	12.96	13.27	12.71
	<b>Total</b>		26.38	22.71	24.57	24.31	24.14	24.14	24.71	23.81

**Table: 2 Per hectare cost of cultivation of tur of beneficiary and non-beneficiary Farmers.(₹/ha)**

SN	Particulars	Size of group							
		Small		Medium		Large		Overall	
		B	NB	B	NB	B	NB	B	NB
1	Hired Human labour								
	Male	4250.00 (9.67)	3991.67 (10.57)	3763.89 (8.92)	4242.22 (10.06)	4102.88 (9.82)	4210.90 (10.12)	4030.60 (9.42)	4176.40 (10.21)
	Female	3768.75 (8.58)	3375 (8.94)	3606.25 (8.55)	3766.67 (8.94)	3635.55 (8.70)	3819.00 (9.18)	3653.40 (8.54)	3714.50 (9.08)
	<b>Total</b>	8018.75 (18.25)	7366.67 (19.51)	7370.14 (17.47)	8008.89 (19.00)	7738.43 (18.52)	8029.80 (19.30)	7684.00 (17.96)	7890.90 (19.30)
2	Bullock labour	2812.50 (6.40)	1979.17 (5.24)	2513.89 (5.96)	2566.67 (6.09)	2656.62 (6.36)	2259.80 (5.43)	2645.00 (6.18)	2295.70 (5.61)
3	Machinery	1356.67 (3.09)	1298.65 (3.44)	1873.81 (4.44)	1762.39 (4.18)	1945.23 (4.66)	1804.50 (4.34)	1652.60 (3.86)	1572.30 (3.85)
4	Seed	1175.00 (2.67)	1212.50 (3.21)	1213.89 (2.88)	1245.83 (2.88)	1235.76 (2.96)	1235.80 (2.97)	1217.10 (2.84)	1234.10 (3.02)
5	Manures	3062.50 (6.97)	2916.67 (7.72)	3242.36 (7.69)	3546.67 (8.41)	3370.75 (8.07)	3608.10 (8.67)	3270.60 (7.65)	3451.40 (8.44)
6	Fertilizers								
	N	312.96 (0.71)	304.27 (0.81)	299.61 (0.71)	296.13 (0.70)	293.16 (0.70)	293.16 (0.70)	299.06 (0.70)	296.27 (0.72)
	P	1609.26 (3.66)	1570.83 (4.16)	1773.22 (4.20)	1752.3 (4.16)	1756.06 (4.20)	1756.10 (4.22)	1731.90 (4.05)	1717.90 (4.20)
	K	432.50 (0.98)	444.17 (1.18)	460.06 (1.09)	454.50 (1.08)	452.91 (1.08)	451.64 (1.09)	450.97 (1.05)	451.64 (1.10)
	<b>Total</b>	2354.72 (5.36)	2319.27 (6.14)	2532.89 (6.00)	2502.93 (5.94)	2502.13 (5.99)	2500.90 (6.01)	2481.90 (5.80)	2465.80 (6.03)
7	Irrigation	1950.00 (4.44)	1183.33 (3.13)	2093.33 (4.96)	2071.11 (4.91)	2027.84 (4.85)	1964.50 (4.72)	2031.90 (4.75)	1840.30 (4.50)
8	Plant protection	1843.75 (4.20)	1510.42 (4.00)	1813.19 (4.30)	1793.75 (4.26)	1793.54 (4.29)	1768.20 (4.25)	1809.50 (4.23)	1724.30 (4.22)
9	Depreciation cost	1047.50 (2.38)	1016.25 (2.69)	1124.56 (2.67)	1112.11 (2.64)	1134.13 (2.71)	1134.10 (2.73)	1113.90 (2.60)	1104.00 (2.70)
11	Land revenue	230.63 (0.52)	220.00 (0.58)	224.33 (0.53)	221.83 (0.53)	214.46 (0.51)	214.46 (0.52)	220.65 (0.52)	217.78 (0.53)
12	Interest on working capital @6% annum	1637.75 (3.73)	1410.49 (3.73)	1594.04 (3.78)	1676.52 (3.98)	1623.65 (3.89)	1652.10 (3.97)	1617.60 (3.78)	1611.10 (3.94)
13	<b>Cost 'A'</b>	25489.80	22433.40	25596.40	26508.70	26242.50	26172.00	25745.00	25408.00

		(58.01)	(59.40)	(60.68)	(62.89)	(62.81)	(62.89)	(60.18)	(62.14)
14	interest on fixed capital @10 % annum	3035.00 (6.91)	2563.75 (6.79)	1086.53 (2.58)	1072.64 (2.54)	1057.67 (2.53)	1051.10 (2.53)	1461.80 (3.42)	1360.10 (3.33)
15	Rental value of land	10847.50 (24.69)	8812.99 (23.34)	11246.40 (26.66)	10360.8 (24.58)	10300.00 (24.65)	10246.00 (24.62)	11293.00 (26.40)	9993.90 (24.44)
16	<b>Cost 'B'</b>	39372.30 (89.60)	33810.20 (89.53)	37929.4 (89.92)	37942.20 (90.02)	37600.20 (90.00)	37470.00 (90.04)	38499.91 (90.00)	36761.62 (89.91)
17	Family labour								
	Male	2450.00 (5.58)	2191.67 (5.80)	2270.56 (5.38)	2243.89 (5.32)	2235.39 (5.35)	2216.40 (5.33)	2288.86 (5.35)	2219.70 (5.43)
	Female	2118.75 (4.82)	1762.50 (4.67)	1982.92 (4.70)	1962.92 (4.66)	1943.58 (4.65)	1929.3 (4.64)	1990.42 (4.65)	1906.04 (4.66)
	<b>Total</b>	4568.75 (10.40)	3954.17 (10.47)	4253.48 (10.08)	4206.81 (9.98)	4178.97 (10.00)	4145.70 (9.96)	4279.28 (10.00)	4125.7 (10.09)
18	<b>Cost 'C'</b>	43941.00 (100.00)	37764.30 (100.00)	42182.90 (100.00)	42149.00 (100.00)	41779.20 (100.00)	41615.00 (100.00)	42779.19 (100.00)	40887.36 (100.00)

(Figure in parentheses indicates the percentage to total cost 'C')

It is also observed from the Table 2 that, in case of non-beneficiary farmer per hectare cost of cultivation of tur crop for the sample as a overall level was ₹40887.36. The per hectare total cost of cultivation i.e. cost 'C' which was observed ₹41615.00 in large size group, ₹42149.00 in medium size group and ₹37764.30 for small size group respectively. The per hectare cost in case of large size group of farmers was higher as input use level was higher. In case of non-beneficiary, the per hectare cost of cultivation at overall level i.e. cost 'A' and cost 'B' was ₹25408.00 and ₹36761.62 respectively which was 62.14 per cent and 89.91 per cent of total cost i.e. cost 'C'. The per hectare cost of cultivation i.e. cost 'A' and cost 'B' was in large size group ₹26172.00 and ₹37470.00, respectively which was 62.89 per cent and 90.04 per cent of total cost i.e. cost 'C'. In non-beneficiary case of small, medium, large and at overall level share of hired human labour (male + female) to total cost i.e. cost 'C' accounted 19.51 per cent, 19.00 per cent, 19.30 per cent and 19.30 per cent, respectively. The human labour used in various farm operations like ploughing, harrowing, sowing, hoeing, weeding, harvesting etc. Bullock labour accounted in case of small, medium, large and at overall level 5.24 per cent, 6.09 per cent, 5.43 per cent and 5.61 per cent, respectively. Bullock labour used in the farm operation like ploughing, harrowing, hoeing and transport of the farm produce from field to farmhouse.

#### Per hectare cost and returns of Tur of beneficiary and non-beneficiary farmer

It is revealed from the table 3 that in case of beneficiary at an overall level, average gross return worked out to ₹69084.55. The net returns obtained at various costs were ₹ 43339.87 at cost 'A', ₹30584.64 at cost 'B', and ₹26305.36 at cost 'C'. The highest output- input ratio at cost 'C' was recorded in small size group i.e. 1.66 and lowest output- input ratio at cost 'C' was recorded in large size group i.e.1.51. At overall level the output- input ratio at cost 'C' was 1.61 and medium size group 1.63. Per quintal cost of production was highest in small size group ₹3222.04 followed by medium size group ₹3128.23 and large group ₹3080.47 at overall per quintal cost of production was ₹ 3115.49.

In case of non-beneficiary overall level average gross return worked out to ₹61270.34. The net return obtain at various costs were ₹35862.75 at cost 'A', ₹24508.72 at cost 'B', and ₹20382.98 at cost 'C'. The highest input-output ratio at cost 'C' was recorded in medium size group i.e. 1.52 and lowest input-output ratio at cost 'C' was recorded in small size group i.e.1.44. At overall level the input-output ratio at cost 'C' was 1.50 and large size group 1.50 respectively. Cost received per quintal was highest in large size group ₹3365.73 followed by medium size group ₹3331.16 and small group ₹3309.30 at overall price received per quintal was ₹ 3282.71. This indicates that the farm pond's water used to provide a supplementary irrigation for crops in dry spell to increase a crop production and gross returns of the farmer.

**Table: 3 Per hectare cost and returns on Tur beneficiary and non-beneficiary farmers of selected farm ponds**

S. No.	Particulars	Size of Group							
		Small		Medium		Large		Overall	
		B	NB	B	NB	B	NB	B	NB
<b>1</b>	<b>Total Cost(₹)</b>								
a)	Cost 'A'	25489.77	22433.40	25596.43	26508.70	26242.50	26172.21	25744.68	25407.59
b)	Cost 'B'	39372.27	33810.20	37929.40	37942.20	37600.20	37469.52	38499.91	36761.62
c)	Cost 'C'	43941.02	37764.30	42182.88	42149.00	41779.20	41615.24	42779.19	40887.36
<b>2</b>	<b>Net Returns Over (₹)</b>								
a)	Cost 'A'	47287.48	31764.50	43228.23	36987.10	36844.30	36591.81	43339.87	35862.75
b)	Cost 'B'	33404.98	20387.80	30895.26	25553.70	25486.60	25294.5	30584.64	24508.72
c)	Cost 'C'	28836.23	16433.60	26641.78	21346.90	21307.60	21148.78	26305.36	20382.98

<b>3)</b>	<b>Yield of Tur</b>								
a)	Main produce (Qtl.)	13.24	11.10	13.07	12.32	13.15	12.05	13.32	12.13
b)	By produce (Qtl.)	5.13	4.13	5.19	4.44	5.08	4.23	5.12	4.27
<b>4</b>	<b>Value of Tur (₹)</b>								
a)	Main produce	71496	53166.7	67527.78	62386.8	61815.8	61705.83	67803.75	60202.29
b)	By produce	1281.25	1031.25	1296.88	1109.03	1270.97	1058.19	1280.8	1068.05
<b>5</b>	<b>Gross returns (₹)</b>	72777.25	54197.9	68824.66	63495.8	63086.8	62764.02	69084.55	61270.34
<b>6</b>	<b>Output-input Ratio</b>								
a)	Cost 'A'	2.86	2.42	2.69	2.40	2.40	2.40	2.68	2.41
b)	Cost 'B'	1.85	1.60	1.81	1.67	1.68	1.68	1.79	1.67
c)	Cost 'C'	1.66	1.44	1.63	1.52	1.51	1.50	1.61	1.50
<b>7</b>	<b>Per quintal cost (₹)</b>	3222.04	3309.30	3128.23	3331.16	3080.47	3365.73	3115.49	3282.71

## CONCLUSION

The beneficiary farmer per hectare cost of cultivation for tur crop at overall level was ₹42779.19 i.e. cost 'C'. In case of non-beneficiary farmer per hectare cost of cultivation for tur at overall level i.e. cost 'C' was ₹ 40887.36. The per hectare cost and returns from tur crop in case of beneficiary overall level average gross return worked out to ₹ 69084.55. In case of non-beneficiary overall level average gross return worked out to ₹ 61270.34. In case of beneficiary farmer at overall level the input-output ratio at cost 'C' was 1.61 and in non-beneficiary farmers at overall level the input-output ratio at cost 'C' was 1.50.

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