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Economic analysis of major crops in Raigarh district of Chhattisgarh State

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Abstract

A study was conducted on 150 farmers of dharamjaigarh block of raigarh district of Chhattisgarh state for estimating the cost of major crops production. Multistage stratified random sampling technique was adopted to select the farmers. Study was based on both primary and secondary data. The primary data was collected from the sample households by survey method using well structure schedule through personal interview. Secondary data regarding the total geographical area of the district, agro-climatic features, cropping pattern, area under major crops, production, and productivity of major crops will also be collected from state statistical abstract and district statistical abstract, etc. The average Gross return of major crops (paddy, groundnut, niger and sunflower) was Rs.94915, Rs.68700.75, Rs. 21875.00 and Rs. 54222.00 per hectare. The net income was calculated as Rs. 37222.21, Rs. 23522.37, Rs. 5676.25 and Rs. 25374.31 per hectare respectively.

Keywords: cost of cultivation, rice, groundnut, sunflower, niger

Introduction

Paddy (*Oryza sativa*) Chhattisgarh are known as rice bowl of central India. Chhattisgarh, the newly emerging state in eastern India, is comparatively under development in terms of agricultural productivity relative to most Indian states. This state has diverse soil types, large tribal population, additional manpower and compatible agro ecological situations through which we can get sustainability in the agricultural sector. In Chhattisgarh, 3.77 m.ha. of rice is cultivated. It covers 8.58% of India's total area, with an average output of 1597 kg / ha and a cultivation of 6.03 million tons (Anonymous, 2012) [2].

Groundnut (*Arachis hypogea* L.): India is ranked as the second largest producer from Asia with production of about 4.2% of the global production in groundnut. Additionally, the major production areas in India are Madhya Pradesh and Maharashtra states which contributes about 90% of the country's produce. It is estimated that Gujarat is leading state for production of Groundnut with 2.36 million tonnes and in the world. India's second position with 6.77 million tonnes production of groundnut. Groundnut is called as the "King of oilseeds". It is one of our country's most important food and cash crops. Groundnut is cultivated at 26.4 million ha. with a complete production of 37.1 million metric tonnes worldwide and an average productivity of 1.4 metric ton / ha.. Groundnut It includes 48-50% of the oil. 26 - 28 percent protein and 11 - 27 percent carbohydrate, minerals and vitamins. Groundnut is an important oilseed crop that offers significant sources of money through seed sales, cakes oil and haulms. Groundnut plays a crucial role in rural populations diets. Groundnut pod yields from farmer's field are low, averaging about 800 kg per ha. less than 1/3 the potential yield of three thousand kg per ha. (Madhusudhana.B., 2013) [6].

Niger (*Guizotia abyssinica* cass.) is one of India's major oilseed plants currently cultivated in an region of approximately 0.6 million hectares with annual output of approximately 1.50,000 tons. Niger (*Guizotia abyssinica* cass.) is one of India's major oilseed plants currently cultivated in an region of approximately 0.6 million hectares with annual output of approximately 1.50,000 tons. India is the main producer of this crop. It is widely cultivated in tribal regions on hill tops and slopes on marginal and sub-marginal lands, although this crop thrives best on well trained loamy soils of excellent depth and texture. The niger seed usually includes 35-40% oil. Oilseed is the second biggest agricultural commodity after cereal sharing 13 percent of the country's gross crop region, accounting for nearly 6 percent of gross domestic agriculture production and 10 percent of the value of all agricultural

commodities. (Project Director, Directorate of Oilseeds Research, 1992 Rajendranagar, Hyderabad - 500 030).

Sunflower (*Helianthus annuus*) is a newly introduced oilseed crop, but it has been cultivated as an ornamental plant in India since pristine times. Sunflower was introduced in India as an oilseed crop for the first time in 1969. This is an important oilseed crop of today. Sunflower can give large quantity of better quality oil per unit area and per unit time. The Varieties available are cultivated during both Kharif and Rabi seasons. Hybrids also take good amount of area in these districts. E.C. 68414, Modern, APSH-11, KBSH- 1 and other Varieties and hybrids are popular. Sunflower is a relatively new crop to India and cultivated area in the country 0.82 M. ha. (2012-13). A.P. contributes 0.140 M. ha. occupying second place as sunflower crop is a highly cross pollinated one. It requires different pollination agents and management practices like rubbing of flowers for increased% of filled in grains. Composite A.P. stands 2nd in the Country in production next to Karnataka. Karnataka is leading state in India for the production of sunflower with 3.04 lakh tonnes and production from an area of 7.94 lakh hectares. In respect of the sunflower yields, the country records an average of 712 kg/hectares while, sunflower is higher oil percent (45–50%) over other oilseed crop. Oil is rich in polyunsaturated fatty acids (PUFA) and has a pleasant taste, great value when refined. The oil is used to make margarine, so it is considered a nice cooking oil. It is rich in linoleic acid (62.5 percent), suggested for heart patients as a nutritional component. The Sunflower cake produces high-quality livestock and poultry feed due to high protein (40 – 44 percent) and balanced amino acids. Sunflowers harvested at dough stage (green sunflower) makes an excellent quality forage, specially for milch cattle. (Agri informatics and service)

As above mentioned crops are mainly cultivated by the farmers but the economics of cultivation of these major crops and constraints during the production and marketing faced by farmers of these major crops and constraints during the production and marketing faced by farmers of Raigarh district. Thus, the present study was conducted with the objective of “Economic Analysis of Major Crops in Raigarh District of Chhattisgarh State”.

Methods and Materials

Chhattisgarh state consists of 27 districts. Raigarh district is placed in the eastern part of Chhattisgarh state. Raigarh district was selected purposively for the study because Raigarh is covered maximum area and production of four major crops, i.e. Paddy, groundnut, niger and sunflower.

Raigarh district having nine blocks, viz., Dharamjaigarh, Lailunga, Gharghoda, Tamnar, Raigarh, Baramkela, Kharsia, Sarangarh, and Pussour. Out of 9 blocks, Dharamjaigarh block was selected purposively as a study area because this block is the most producing area for these crops. There are 190 numbers of villages in Dharamjaigarh block. Out of these villages, five villages, i.e. Sakarliya, Kataipali- D, Shahpur, Sisinga and Baisly colony was selected randomly which cover all four major crops for the study area. A sample of 150 respondents was selected by randomly using probability proportion criteria for each village. The collection of required data on relevant variables. The farm holding categorized into four size groups: Marginal (Below 1.00 ha.), Small (1.01 - 2.00 ha.), Medium (2.01 - 4.0 ha.) and Large (Above 4.0 ha.). The study was based on both primary and secondary data. The primary data was collected from the sample households by survey method using well structure schedule through personal interview. Secondary data regarding the total geographical area of the district, agro-climatic features, cropping pattern, area under major crops, production, and productivity of major crops will also be collected from state statistical abstract and district statistical abstract, etc.

Results

Cost of cultivation of Major crops

1. Cost of cultivation of Paddy

The cost of cultivation of paddy is shown in table 1 and fig 1. It can be seen that on an average per hectare cost of cultivation of Paddy was estimated as Rs. 57992.96 per hectare which varied from Rs. 53407.75 per hectare at marginal farms to Rs. 59292.32 per hectare at large farms respectively. Human labour cost (both family and hired labour) was noted as a share of significant costs in the cultivation of paddy. The average per hectare human labour cost was estimated Rs. 13664.92 which varied from Rs. 17436.03 per hectare at marginal farms to Rs. 10618.39 per hectare at large farms respectively. The next major cost was observed as bullock and machinery which was estimated about Rs. 9471.40 per hectare of the total cost of cultivation which varied from Rs. 4653.73 per hectare at marginal farms to Rs. 12486.57 per hectare at large farms respectively. The average cost of seed was estimated as Rs. 3933.80 per hectare which varied from Rs. 2610.39 per hectare at marginal farms to Rs. 4500.00 per hectare at large farms respectively and average cost of manure and fertilizer was estimated as Rs. 6779.21 per hectare which varied from Rs. 5602.41 per hectare at marginal farms to Rs. 7266.56 per hectare at large farms respectively.

Table 1: Cost of cultivation of paddy at separate groups of farms (Rs/ha.)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
A	Variable cost					
1	Human labour					
	a) Family labour	11590.57 (21.74)	7500 (13.14)	6194.69 (10.75)	3458.10 (5.84)	5649.63 (9.76)
	No. of family labour	64	42	34	20	31.69
	b) Hired labour	5845.46 (10.97)	9342.53 (16.37)	8997.05 (15.62)	7160.29 (12.10)	8015.28 (13.85)
	No. of hired labour	33	53	50	41	45.37
	Average labour	96.84	94.97	84.07	60.21	83.79
	Total human labour	17436.03 (32.71)	16842.53 (29.51)	15191.74 (26.37)	10618.39 (17.94)	13664.92 (23.61)
2	Bullock and machinery power					

	a) Bullock	524.34 (0.98)	225.65 (0.40)	0.00 (0.00)	0.00 (0.00)	89.45 (0.15)
	No. of bullock	2	1			0.75
	b) Machinery	4129.45 (7.75)	6250.00 (10.95)	8143.81 (14.14)	12486.57 (21.10)	7752.46 (13.48)
	Working hour	4.58	6.94	9.04	13.87	8.60
	Total bullock and Machiner machinery	4653.79 (8.73)	6475.65 (11.35)	8143.81 (14.14)	12486.57 (21.10)	9471.40 (16.36)
3	Seed	2610.39 (4.90)	3734.98 (6.54)	3477.11 (6.04)	4500.00 (7.60)	3933.80 (6.80)
	Seed rate (kg)	104	60	71	30	66
4	Manures and Fertilizer	5602.41 (10.51)	6358.90 (11.14)	6623.60 (11.50)	7266.56 (12.28)	6779.21 (11.71)
5	Plant protection	678.88 (1.27)	750.00 (1.31)	870.00 (1.51)	827.22 (1.40)	809.54 (1.40)
6	Irrigation charge	135.00 (0.25)	245.00 (0.43)	375.00 (0.65)	450.00 (0.76)	361.87 (0.63)
7	Miscellaneous cost	100.35 (0.19)	105.52 (0.18)	113.11 (0.20)	117.98 (0.20)	112.66 (0.19)
8	Interest on working capital	509.63 (0.96)	823.20 (1.44)	853.51 (1.48)	851.16 (1.44)	820.41 (1.42)
	Sub total	31726.47 (59.33)	35335.78 (61.72)	35647.88 (61.68)	37117.88 (62.53)	35953.81 (61.92)
B	Fixed cost					
9	Rental value of owned land	20000.00 (37.52)	20000.00 (35.04)	20000.00 (34.72)	20000.00 (33.80)	20000.00 (34.55)
10	Land revenue	12 (0.02)	12 (0.02)	12 (0.02)	12 (0.02)	12 (0.02)
11	Depreciation	250.88 (0.47)	405.84 (0.71)	619.47 (1.08)	716.03 (1.21)	587.74 (1.02)
12	Interest on fixed capital	1418.40 (2.66)	1429.25 (2.50)	1442.14 (2.50)	1446.41 (2.44)	1439.41 (2.49)
	Sub total	21681.28 (40.67)	21847.09 (38.28)	22073.61 (38.32)	22174.43 (37.47)	22039.15 (38.08)
C	Total cost (A+B)	53407.75 (100.00)	57182.87 (100.00)	57721.49 (100.00)	59292.32 (100.00)	57992.96 (100.00)

Note:- Figures in the parentheses are percentage to the total cost of cultivation of paddy.

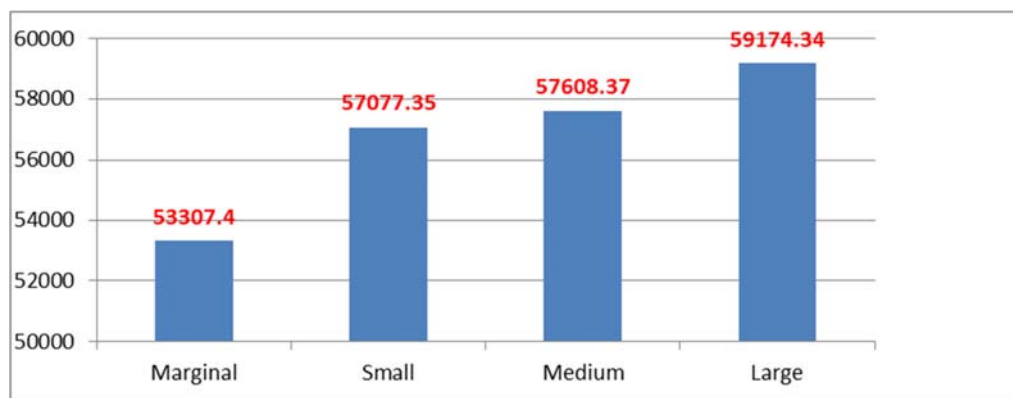


Fig 1: Cost of cultivation of paddy at separate groups of farms (Rs/ha.)

2. Cost of cultivation of Groundnut

The cost of cultivation of groundnut is shown in table 2 and fig 2. It can be seen that on an average per hectare cost of cultivation of Groundnut was estimated as Rs. 48136.51 per hectare which varied from Rs. 42176.32 per hectare at marginal farms to Rs. 50003.47 per hectare at large farms respectively. The share of major cost on the cultivation of groundnut was observed human labour cost (both family and hired labour). The average per hectare human labour cost was

estimated Rs. 17095.27 which varied from Rs. 16400.86 per hectare at marginal farms to Rs. 17241.94 per hectare at large farms respectively. The next major cost was observed as seed which was estimated about Rs. 6214.32 per hectare of the total cost of cultivation which varied from Rs. 5395.09 per hectare at marginal farms to Rs. 6480.00 per hectare at large farms respectively. The average cost of bullock and machinery was estimated as Rs. 5009.04 per hectare which varied from Rs. 2370.69 per hectare at marginal farms to Rs.

5645.16 per hectare at large farms respectively and average cost of manure and fertilizer was estimated as Rs. 3922.69 per hectare which varied from Rs. 3100.00 per hectare at

marginal farms to Rs. 4360.00 per hectare at large farms respectively. (table 2)

Table 2: Cost of cultivation of groundnut at separate groups of farms (Rs/ha.)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
A	Variable cost					
1	Human labour					
	a) Family labour	10905.17 (25.86)	8089.17 (17.69)	7533.33 (15.48)	6241.94 (12.48)	7297.26 (15.16)
	No. of family labour	60	45	43	35	40.92
	b) Hired labour	5495.69 (13.03)	8853.50 (19.36)	9633.33 (19.80)	11000.00 (22.00)	9798.01 (20.35)
	No. of hired labour	31	51	54	62	55.42
	Average labour	91.16	95.85	97	98.22	96.89
	Total human labour	16400.86 (38.89)	16942.68 (37.06)	17166.67 (35.29)	17241.94 (34.48)	17095.27 (35.51)
2	Bullock and machinery power					
	a) Bullock	646.55 (1.53)	191.08 (0.42)	0.00 (0.00)	0.00 (0.00)	90.44 (0.19)
	No. of bullock	3	1			1
	b) Machinery	1724.14 (4.09)	4000.00 (8.75)	5366.67 (11.03)	5645.16 (11.29)	4918.60 (10.22)
	Working hour	2.2	4.44	5.96	6.27	4.8
	Total bullock and machinery	2370.69 (5.62)	4191.08 (9.17)	5366.67 (11.03)	5645.16 (11.29)	5009.04 (10.41)
3	Seed	5395.09 (12.79)	5850.00 (12.79)	6300.00 (12.95)	6480.00 (12.96)	6214.32 (12.88)
	Seed rate (kg)	89.91	90	90	90	90
4	Manures and Fertilizer	3100.00 (7.35)	3370.00 (7.37)	3851.87 (7.92)	4360.00 (8.72)	3922.69 (8.15)
5	Plant protection	900.00 (2.13)	1020.00 (2.23)	1300.00 (2.67)	1300.00 (2.60)	1205.76 (2.50)
6	irrigation charge	86.21 (0.20)	146.50 (0.32)	233.33 (0.48)	258.06 (0.52)	214.05 (0.44)
7	Interest on working capital	100.00 (0.24)	693.91 (1.65)	937.24 (2.05)	1067.41 (2.19)	1054.55 (2.19)
8	Miscellaneous cost	100.00 (0.24)	125.00 (0.27)	154.00 (0.32)	186.00 (0.37)	158.31 (0.33)
	Sub total	29046.75 (68.87)	32582.50 (71.26)	35439.94 (72.85)	36632.89 (73.26)	34874.00 (72.45)
B	Fixed cost					
9	Rental value of owned land	12000.00 (28.45)	12000.00 (26.25)	12000.00 (24.67)	12000.00 (24.00)	12000.00 (25.73)
10	Land revenue	12.00 (0.03)	12.00 (0.03)	12.00 (0.02)	12.00 (0.02)	12.00 (0.03)
11	Depreciation	258.62 (0.61)	267.52 (0.59)	333.33 (0.69)	483.87 (0.97)	382.88 (0.80)
12	Interest on fixed capital	858.94 (2.04)	859.57 (1.88)	864.17 (1.78)	874.71 (1.75)	867.64 (1.80)
	Sub total	13129.56 (31.13)	13139.08 (28.74)	13209.51 (27.15)	13370.58 (26.74)	13262.52 (27.55)
C	Total cost (A+B)	42176.32 (100.00)	45721.58 (100.00)	48649.45 (100.00)	50003.47 (100.00)	48136.51 (100.00)

Note:- Figures in the parentheses are percentage to the total cost of cultivation of groundnut.

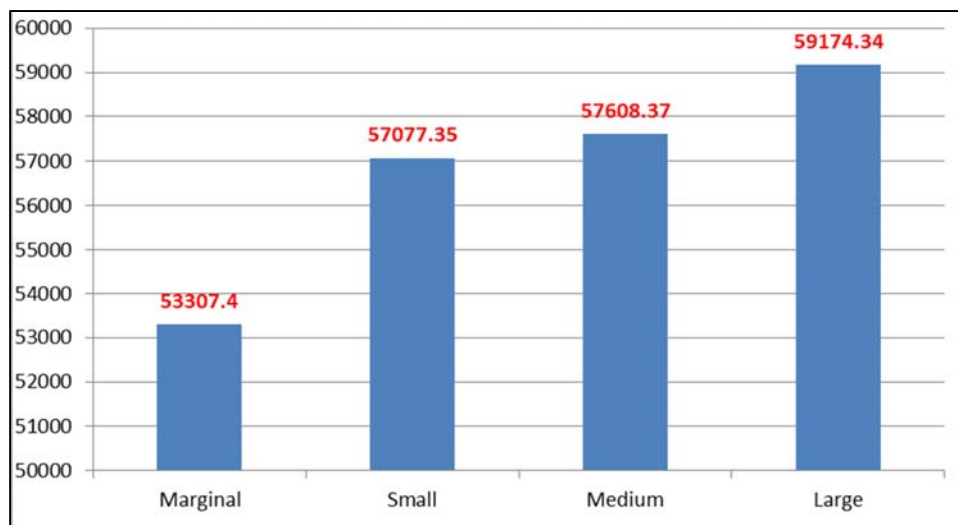


Fig 2: Cost of cultivation of groundnut at separate groups of farms (Rs/ha.)

3. Cost of cultivation of Niger

The cost of cultivation of Niger is shown in table 3. and Fig 3. It can be seen that on an average per hectare cost of cultivation of Niger was estimated as Rs. 16593.72 which varied from Rs. 15631.45 per hectare at marginal farms to Rs. 16947.88 per hectare at large farms respectively. The share of major cost on the cultivation of niger was observed human labour. The average per hectare human labour cost was estimated as Rs. 5790.15 per hectare which varied from Rs. 5174.60 per hectare at marginal farms to Rs. 5981.89 per

hectare at large farms respectively. The contribution of family human labour and hired human labour was observed 13.77 per cent and 18.44 per cent respectively of the total cost of cultivation. The next major cost was observed as bullock and machinery which was estimated as Rs. 3270.34 per hectare, which varied from Rs. 3201.27 per hectare at marginal farms to Rs. 3300.00 per hectare at large farms respectively, the contribution of bullock and machinery was observed 18.19 per cent respectively of the total cost of cultivation respectively.

Table 3: Cost of cultivation of niger at different size groups of farms (Rs/ha.)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
A	Variable cost					
1	Human labour					
	a) Family labour	4158.73 (26.60)	2500.00 (15.68)	2381.82 (12.85)	2264.06 (12.03)	2475.63 (13.77)
	No. of Family Labour	22	13	13	12	13.16
	b) Hired labour	1015.87 (6.50)	2846.15 (17.85)	3575.76 (19.29)	3717.83 (19.75)	3314.52 (18.44)
	No. of Hired labour	6	15	16	20	17.14
	Average labour	27.61	27.84	29.33	32.17	30.47
	Total human labour	5174.60 (33.10)	5346.15 (33.53)	5957.58 (32.15)	5981.89 (31.77)	5790.15 (32.21)
2	Bullock and machinery power					
	a) Bullock	952.38 (6.09)	384.62 (2.41)	0.00 (0.00)	0.00 (0.00)	141.10 (0.78)
		4	2			1
	b) Machinery	2248.89 (14.39)	2861.54 (17.95)	3280.00 (17.70)	3300.00 (17.53)	3129.25 (17.41)
	Working hours	2.49	3.17	3.64	3.66	3.24
	Total bullock and machinery	3201.27 (20.48)	3246.15 (20.36)	3280.00 (17.70)	3300.00 (17.53)	3270.34 (18.19)
3	Seed	210.00 (1.34)	225.00 (1.41)	240.00 (1.29)	250.00 (1.33)	239.84 (1.33)
	Seed rate (kg)	4.2	4.5	4.8	5	4.62
4	Manures and Fertilizer	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
5	Plant protection	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
6	irrigation charge	0.00 (0.00)	0.00 (0.00)	200.00 (1.08)	280.44 (1.27)	171.50 (0.95)
7	Interest on working capital	105.00 (0.93)	110.00 (0.93)	142.00 (0.86)	145.00 (0.90)	161.89 (0.90)
8	Miscellaneous cost	145.98 (0.67)	148.27 (0.69)	159.68 (0.77)	170.14 (0.77)	134.92 (0.75)
	Sub total	8836.85	9075.58	9979.26	9887.47	9618.91

		(56.53)	(56.92)	(62.26)	(62.50)	(61.20)
B	Fixed cost					
9	Rental value of owned land	6100.00 (39.02)	6100.00 (38.26)	6100.00 (32.91)	6100.00 (32.40)	6100.00 (35.40)
10	Land revenue	12.00 (0.08)	12.00 (0.08)	12.00 (0.06)	12.00 (0.06)	11.97 (0.07)
11	Depreciation	238.10 (1.52)	307.69 (1.93)	424.24 (2.29)	483.87 (2.57)	420.77 (2.34)
12	Interest on fixed capital	444.51 (2.84)	449.38 (2.82)	457.54 (2.47)	464.54 (2.47)	457.72 (2.34)
	Sub total	6794.60 (43.47)	6869.07 (43.08)	6993.78 (37.74)	7060.41 (37.50)	6974.81 (38.80)
C	Total cost (A+B)	15631.45 (100.00)	15944.65 (100.00)	16973.04 (100.00)	16947.88 (100.00)	16593.72 (100.00)

Note: Figures in the parentheses are percentage to the total cost of cultivation of Niger.

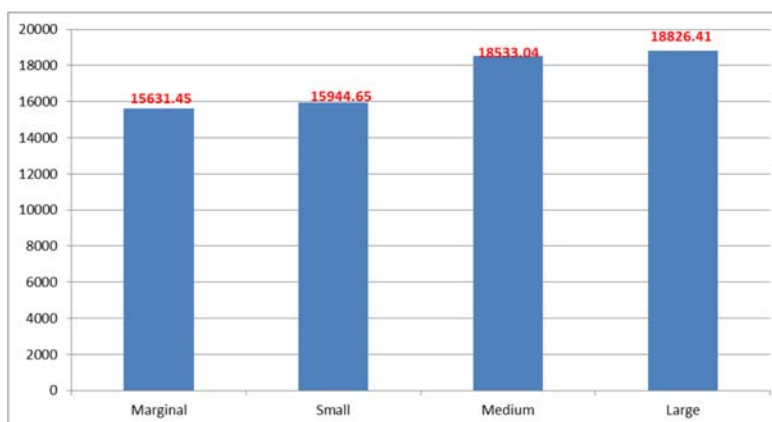


Fig 3: Cost of cultivation of Niger at different size groups of farms (Rs/ha.)

4. Cost of cultivation of Sunflower

The cost of cultivation of Sunflower is shown in table 4. and Fig 4. It can be seen that on an average per hectare cost of cultivation of Sunflower was estimated as Rs. 44588.08 which varied from Rs. 42767.35 per hectare at marginal farms to Rs. 46093.69 per hectare at large farms respectively. The average per hectare human labour cost was estimated as Rs. 14818.80 per hectare which varied from Rs. 14683.33 per hectare at marginal farms to Rs. 14756.10 per hectare at large farms respectively which observed 33.23 per cent respectively of the total cost of cultivation. The next major cost was observed as bullock and machinery cost which was estimated as Rs. 5314.53 per hectare which varied from Rs. 5655.56 per

hectare at marginal farms to Rs. 5200.00 per hectare at large farms respectively. The contribution of bullock and machinery was observed 11.92 per cent respectively of the total cost of cultivation. The average cost of seed was estimated as Rs. 2765.81 per hectare which varied from Rs. 2500 per hectare at marginal farms to Rs. 3000 per hectare at large farms respectively and average cost of manure and fertilizer was estimated as Rs. 4666.45 per hectare which varied from Rs. 4100 per hectare at marginal farms to Rs. 5235.00 per hectare at large farms respectively. The contribution of manure and fertilizer was observed 10.47 per cent respectively of total cultivation cost.

Table 4: Cost of cultivation of sunflower at different size groups of farms (Rs/ha.)

S. No.	Particular	Marginal	Small	Medium	Large	Overall
A	Variable cost					
1	Human labour					
	a) Family labour	11800.00 (27.05)	9615.38 (21.92)	6140.63 (13.40)	4024.39 (8.57)	7041 (15.79)
	No. of family labour	63	52	33	22	37.63
	b) Hired labour	2883.33 (6.61)	5076.92 (11.57)	8937.50 (19.51)	10731.71 (22.86)	7776.92 (17.44)
	No. of Hired labour	17	28	49	59	42.76
	Average labour	79.33	79.23	81.56	80.48	80.32
	Total human labour	14683.33 (33.67)	14692.31 (33.49)	15078.13 (32.91)	14756.10 (31.43)	14818.80 (33.23)
2	Bullock and machinery power					
	a) Bullock	3655.56 (8.38)	2100.00 (4.79)	700.00 (1.53)	0.00 (0.00)	1220.51 (2.74)
	No. of bullock	10	6			4
	b) Machinery	2000.00 (4.59)	3300.00 (7.52)	4500.00 (9.82)	5200.00 (11.07)	4094.02 (9.18)
	Working Hour	2.22	3.66	5	5.77	4.16
	Total bullock and machinery	5655.56 (12.97)	5400.00 (12.31)	5200.00 (11.35)	5200.00 (11.07)	5314.53 (11.92)
3	Seed	2500.00	2600.00	2750.00	3000.00	2765.81

		(5.73)	(5.93)	(6.00)	(6.39)	(6.20)
	Seed rate(kg)	5	5.2	5.5	6	5.42
4	Manures and Fertilizer	4100.00 (9.40)	4170.00 (9.51)	4660.00 (10.17)	5235.00 (11.15)	4666.45 (10.47)
5	Plant protection	800.00 (1.83)	850.00 (1.94)	1000.00 (2.18)	1100.00 (2.34)	970.94 (2.18)
6	irrigation charge	1000.00 (2.29)	1200.00 (2.74)	2000.00 (4.37)	2400.00 (5.11)	1808.55 (4.06)
7	Interest on working capital	862.17 (1.98)	867.37 (1.98)	920.64 (2.01)	950.73 (2.02)	910.35 (2.04)
8	Miscellaneous expenses	210.00 (0.48)	218.00 (0.50)	231.00 (0.50)	249.00 (0.53)	231.19 (0.52)
	Sub total	29601.06 (67.87)	29779.68 (67.89)	31608.77 (68.99)	32641.83 (69.52)	31255.44 (70.10)
B Fixed cost						
9	Rental value of owned land	12000.00 (27.51)	12000.00 (27.36)	12000.00 (26.19)	12000.00 (25.56)	12000.00 (26.63)
10	Land revenue	12 (0.02)	12 (0.02)	12 (0.02)	12 (0.02)	12 (0.02)
11	Depreciation	277.78 (0.64)	323.08 (0.74)	406.25 (0.89)	463.41 (0.99)	388.03 (0.87)
12	Interest on fixed capital	876.51 (2.01)	900.98 (2.05)	933.69 (2.04)	976.44 (2.08)	932.61 (2.09)
	Sub total	13166.29 (32.13)	13236.06 (32.11)	13351.94 (31.01)	13451.86 (30.48)	13332.64 (29.91)
C	Total cost (A+B)	42767.35 (100.00)	43015.74 (100.00)	44960.71 (100.00)	46093.69 (100.00)	44588.08 (100.00)

Note:- Figures in the parentheses are percentage to the total cost of cultivation of sunflower.

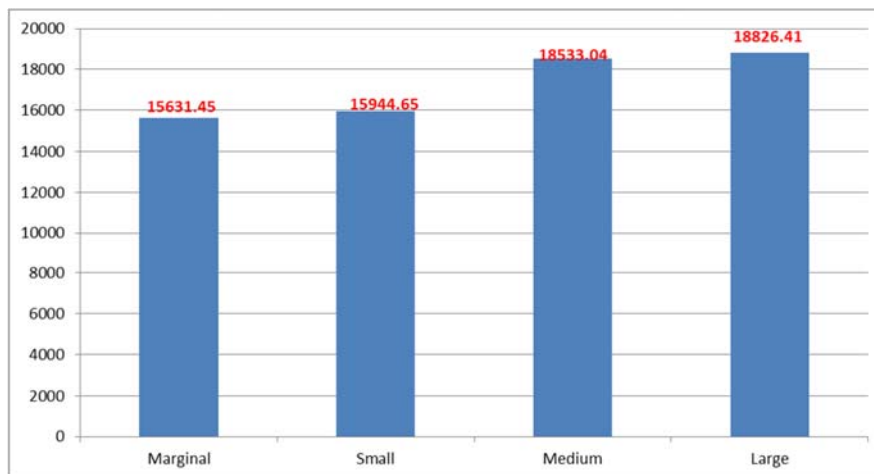


Fig 4: Cost of cultivation of sunflower at different size groups of farms (Rs/ha.)

Summary and Conclusion

The survey for this purpose was conducted in Dharamjaigarh block of Raigarh district 150 respondents of the blocks was taken for the present study. A cross sectional data were collected from purposively selected one fifty hundred farmers from selected block for the year 2017-18. Primary data were collected through personal interview with the help of well structured schedule.

Average cultivation cost per hectare of significant plants (paddy, groundnut, niger and sunflower) were calculated Rs. 56856.48, Rs. 46637.70, Rs. 16198.75 and Rs. 43475.69 respectively. On an average yield of major crops (paddy, groundnut, niger and sunflower) were observed 46.30 quintals, 14.35 quintals, 4.37 quintals and 12.75 quintals per hectare respectively. On the average input-output proportion of significant crops (paddy, groundnut, niger and sunflower) came to 1: 1.75, 1: 1.50, 1: 1.35 and 1: 1.58 respectively on the sample farms. Average cost of production per quintal of major crops (paddy, groundnut, niger and sunflower) was worked out to be Rs. 1228.99, Rs. 3248.53, Rs. 3712.04 and Rs. 3412.50 respectively. The average Gross return of major crops (paddy, groundnut, niger and sunflower) was Rs.94915,

Rs.68700.75, Rs. 21875.00 and Rs. 54222.00 per hectare. The net income was calculated as Rs. 37222.21, Rs. 23522.37, Rs. 5676.25 and Rs. 25374.31 per hectare respectively. On an average Family labour income of major crops (paddy, groundnut, niger and sunflower) was Rs. 15022.17, Rs. 16938.03, Rs. 5615.06 and Rs. 14802.47 respectively. On the basis of cost concept average per hectare cost of cultivation (Cost -C₂) of major crops (paddy, groundnut, niger and sunflower) were observed to be Rs. 56856.47, Rs. 46637.70, Rs. 16198.75 and Rs. 43457.69 per hectare respectively. Average Net income over cost C₂ of major crops (paddy, groundnut, niger and sunflower) was Rs. 42572.78, Rs. 35522.37, Rs. 11776.25 and Rs. 37374.31 respectively. The marketable surplus of major crops (paddy, groundnut, niger and sunflower) on an average per hectare was observed to be 91.73 quintals (87.12 per cent), 8.14 (69.51 per cent), 1.94 quintals (68.07 per cent) and 2.33 quintals (70.44 per cent) respectively of the total quantity produced.

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