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An economic analysis of wheat crop at Balodabazar-Bhatapara district of Chhattisgarh state

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Abstract

The research work was conducted with a view to analyze the cost and return of wheat in Balodabazar-Bhatapara district of Chhattisgarh state of India. For study total 160 farmers were considered, which includes marginal (73), small (40), medium (29) and large (18). The primary data for wheat crop was collected from the sampled farmers by personal interview and well designed schedule. Secondary data like area, production and productivity were collected from agriculture statistics and commissioner land record govt. of CG, District survey report, directorate of economics and statistics and other authentic sources. Cost concept (CACP) analytical tool used for cost and return analysis. The study analyzed that average size of farm found to be 1.82 hectares, average net cropped area observed to be 2.15 ha./farm and cropping intensity 122.79 percent. the average yield of wheat was 19.36 quintal per hectare. The average cost of cultivation for wheat was Rs.28196.76 per ha. Gross and net return estimated was Rs.38948.03 per ha. and Rs. 10751.29 per ha. respective. The input : output ratio was 1:1.38 and benefit cost ratio 1:0.38 per ha. Marketable surplus of produce observed was 14.25 qt./ha. and produce sold to the village traders/wholesalers and mandi.

Keywords: wheat cost and return, cost concept, income : output ratio, benefit: cost ratio, marketable surplus, gross return, net return

Introduction

- Wheat is the most widely cultivated cereal in the world which is planted in 215.48M.ha. and producing 731.35MT (2018-19). (Anonymous 2018-19).
- Wheat is the second major important crop after rice in India. Wheat production in India accounts 8.7% of total in the world.
- Wheat production in India has also increased at a slow pace from 75.81MT in 2006-07 to 98.38MT in 2016-17.
- The productivity of wheat which was 2708 Kg./ha. in 2006-07 has increased to 3216 Kg./ha. in 2016-17. And the total area under the wheat crop is 30.60M.ha. (Anonymous 2016-17).
- Wheat is an important rabi season crop. The area and production under wheat in Chhattisgarh is 0.11M.ha. and it accounts 0.37% to India's total wheat producing area and 0.16MT which is 0.16% to all India and productivity estimated as 1391Kg./ha.

Objectives of the Study

To analyze cost and return of wheat, marketable surplus and disposable pattern of wheat.

Materials and Methods

In Balodabazar-Bhatapara district area under wheat production of 3.79 000'ha with the production 5.94 000'MT and productivity 1567 kg./ha. in year 2017-18 (Anonymous 2017-18). Balodabazar-Bhatapara district was selected purposively out of 27 districts of Chhattisgarh. Balodabazar-Bhatapara district consists six blocks namely Balodabazar, Bhatapara, Bilaigarh, Kasdol, Simga and Palari Out of these Palari block will be selected purposively for the study purpose. Six villages (about 5% of total villages) were selected for study purpose out of 132 villages in Palari block. 160 farmers were selected for study purpose which is 2 percent of their total population.

Analytical tool

Cost of cultivation

CACP Cost Concept – for Cost-A1, A2, B1, B2, C1, C2 and C3

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$$\text{Input-output ratio} = \frac{\text{Gross return}}{\text{Total Input cost}}$$

Cf = Quantity retained for seed, W = Quantity paid for wages and S = Quantity kept for other purpose

Income Analysis: Gross income = Main product income + By product income

Net income = Gross income - Cost C2

Farm business income = Gross income – Cost A1

Family labour income = Gross income – Cost B1

marketable surplus of produce - MS = P - (C + Cf + W + S)

Where,

MS = Marketable Surplus, P = Production, C = Consumption,

Result and Discussion

Table 1 indicates: variable costs like material cost, human labour cost, machine labour miscellaneous costs and interest on working cost. These costs follow increasing pattern from marginal to large farm households. Major variable cost incurred on machine labour Rs. 5232.02 (18.07 percent of total cost = TVC + TFC).

Table 1: Total variable cost incurred in different size of farm households (Rs./ha.)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
A	Input material cost					
1	Seed cost	2825.75 (10.56)	3062.16 (11.14)	3096.82 (11.03)	3143.84 (9.53)	3076.36 (10.62)
2	Fertilizers cost	4088.13 (15.29)	4065.28 (14.79)	4051.55 (14.43)	4058.47 (12.31)	4061.57 (14.02)
3	Plant protection cost	1196.50 (4.47)	1203.86 (4.38)	1206.25 (4.29)	1245.54 (3.77)	1221.29 (4.21)
4	Irrigation charges	486.26 (1.81)	480.65 (1.74)	487.68 (1.73)	503.8754 (1.52)	493.12 (1.70)
	Total material cost	8596.65 (32.15)	8811.97 (32.06)	8842.31 (31.49)	8951.74 (27.16)	8852.36 (30.57)
5	Family labour	1496.54 (5.59)	1147.26 (4.17)	776.56 (2.76)	638.58 (1.93)	875.24 (3.02)
6	Hired labour	3024.26 (11.31)	3214.36 11.69	3778.70 (13.45)	3827.85 (11.61)	3603.23 (12.44)
	Total human labour	4520.81 (16.91)	4361.63 (15.86)	4555.27 (16.22)	4466.44 (13.55)	4478.48 (15.46)
7	Machine labour	4896.26 (18.31)	5148.68 (18.73)	5236.25 (18.65)	5364.24 (16.27)	5232.02 (18.07)
8	Miscellaneous	270.20 (1.01)	274.83 (0.99)	279.50 (0.99)	281.73 (0.85)	278.44 (0.96)
9	Interest on working cost	731.35 (2.73)	743.88 (2.70)	756.53 (2.69)	762.56 (2.31)	753.65 (2.60)
	Total variable cost	19015.29 (71.12)	19341.00 (70.37)	19669.88 (70.06)	19826.73 (60.16)	19594.97 (67.68)

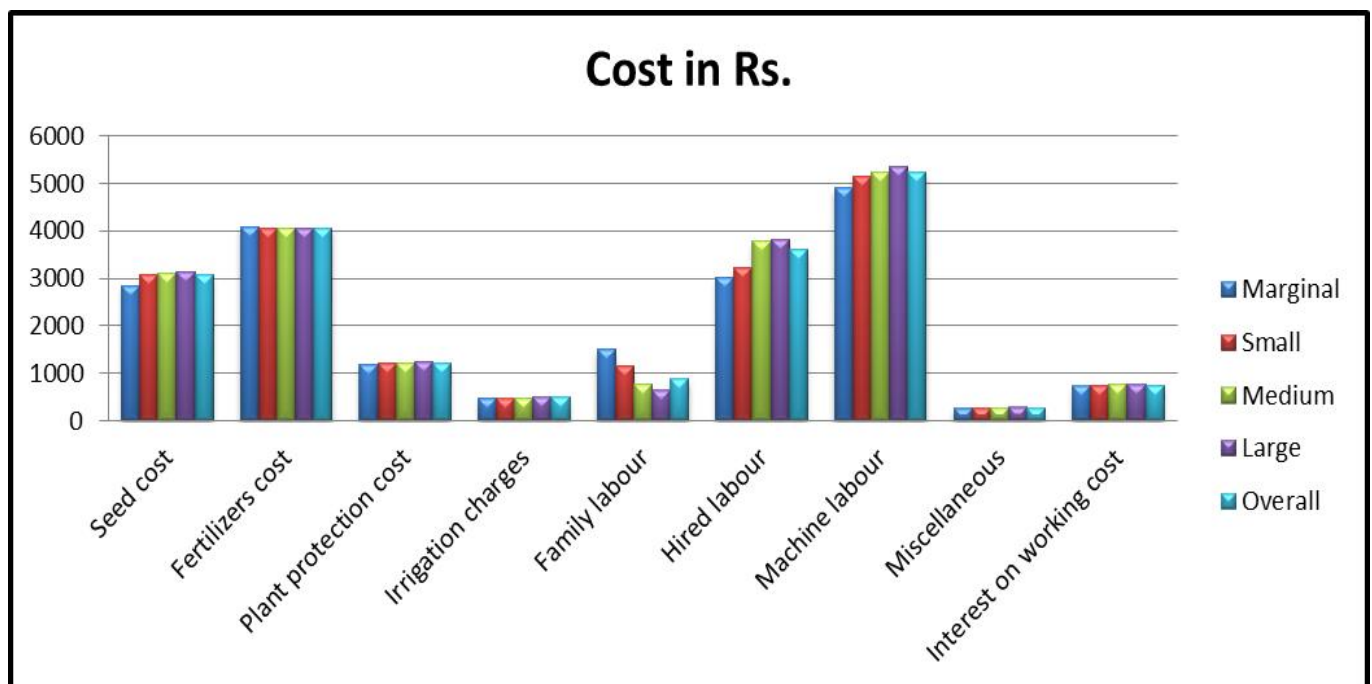


Fig 1: Total variable cost of Wheat of different size of farm households

Table 2 indicates: fixed cost incurred in per ha. farm from marginal to large which observed increasing pattern with the size of households. Interest on fixed cost was the 10 percent

of total fixed cost. Major fixed cost observed was on rental value of owned land Rs.8411.45 per ha. (29.05 percent of total cost).

Table 2: Total fixed cost incurred in different size of farm households (Rs./ha.)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
1	Depreciation	325 (1.21)	350 (1.27)	385 (1.37)	410 (1.24)	367.5 (1.26)
2	Land revenue	15.00 (0.05)	15.00 (0.05)	15.00 (0.05)	15.00 (0.04)	15.00 (0.05)
3	Rental value of owned land	6854.81 (25.64)	7226.85 (26.29)	7440.49 (26.50)	12123.68 (36.78)	8411.45 (29.05)
4	Interest on fixed cost	523.62 (1.9)	551.36 (2.00)	563.62 (2.00)	578.92453 (1.75)	561.45 (1.93)
	Total fixed cost	7718.43 (28.87)	8143.21 (29.62)	8404.11 (29.93)	13127.60 (39.83)	9355.41 (32.31)
	Total cost (TVC + TFC)	26733.73 (100)	27484.2 (100)	28074 (100)	32954.34 (100)	28950.38 (100)

Table 3 indicates: cost of cultivation incurred in different size of farm households in Rs. per ha. these costs observed increasing pattern with farm size. Cost-A1 and Cost-A2 was

same because farmers usually cultivate the crop in their own land. Overall Cost-C2 observed was Rs.28196.73 perha.

Table 3: Cost of cultivation incurred in different size of farm households (Rs./ha.)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
1	Cost A1	17127.38	17814.85	18536.79	18850.58	18348.57
2	Cost A2 (A1+Rent paid for Leased in Land)	17127.38	17814.85	18536.79	18850.58	18348.57
3	Cost B1 (Cost A2+interest on fixed capital)	17651.01	18366.22	19100.42	19429.50	18910.02
4	Cost B2 (Cost B1+Rental value of owned land)	24505.82	25593.07	26540.91	31553.18	27321.48
5	Cost C1 (Cost B1+Family labour cost)	19147.56	19513.48	19876.98	20068.09	19785.27
6	Cost C2 (Cost B2+ Family labour cost)	26002.37	26740.33	27317.47	32191.77	28196.73
7	Cost C3 (Cost C2+10% of cost C2)	28602.61	29414.37	30049.22	35410.95	31016.40

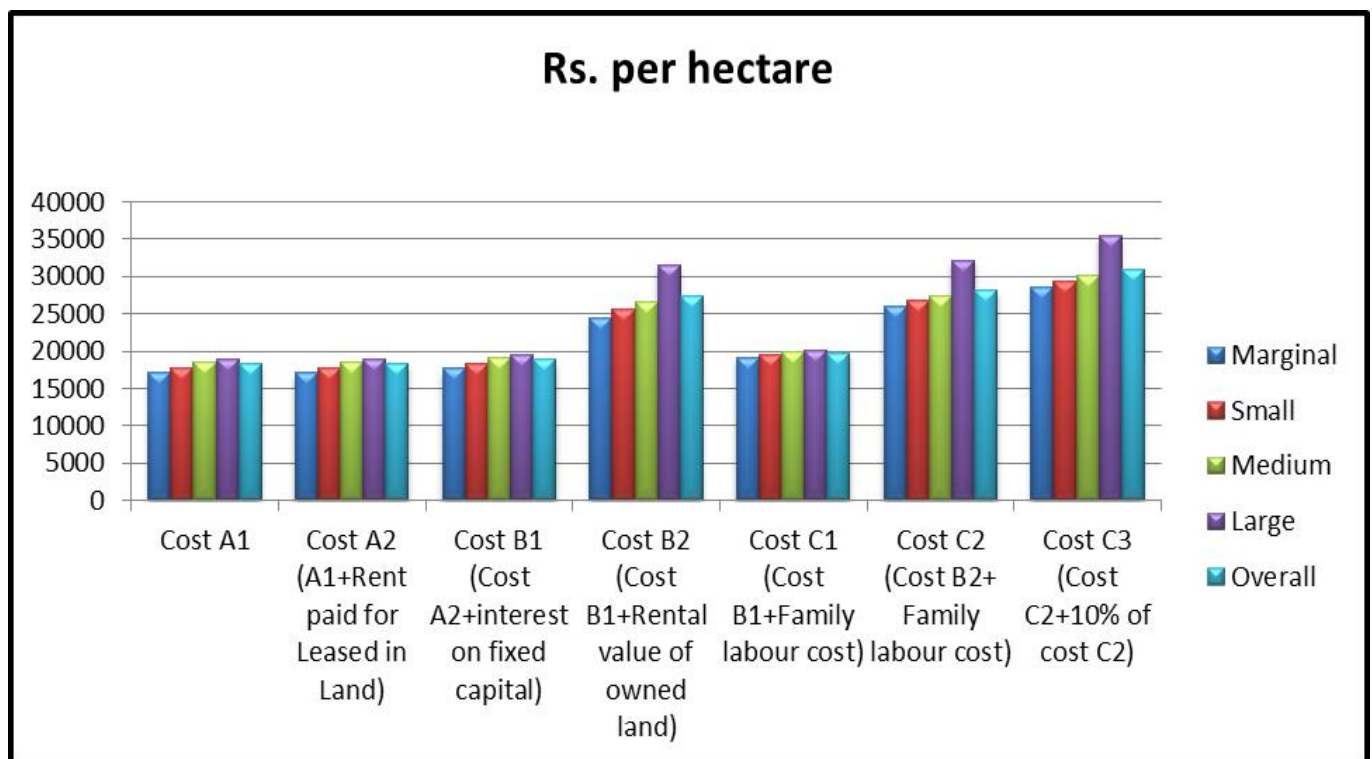


Fig 2: Cost of cultivation of wheat of different size of farm households

Table 4 indicates: grain yield increases with farm size on an average overall yield 19.36 qt. per ha. price of grain sold Rs. 1925.00 per qt. and gross return observed Rs.38948.03 per ha. which was maximum for large farmers Rs.40787.43 per ha. Net return observed Rs.10751.29 per ha. maximum for

medium farm Rs. 12650.78 per ha. and minimum for large farm Rs.8595.65 per ha. because fixed cost maximum for large farms. On an average overall Input : Output and Benefit : Cost ratio was observed 1:1.38 and 1:0.38, respectively.

Table 4: Yield, returns, cost of production per quintal and Input-Output ratio of wheat (Rs. /ha.)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
1	Grain yield	18.06	19.27	19.86	20.26	19.36
2	Price of grain sold (Rs./qt.)	1925.00	1925.00	1925.00	1925.00	1925.00
3	Value of grain yield	34765.50	37094.75	38230.50	39000.50	37272.81
4	Yield of by product	21.67	23.70	24.82	25.52	23.93
	Price of straw sold (Rs./qt.)	70.00	70.00	70.00	70.00	70.00
5	Value of by product	1517.04	1659.14	1737.75	1786.93	1675.21
6	Gross return	36282.54	38753.89	39968.25	40787.43	38948.03
7	Cost of cultivation	26002.37	26740.33	27317.47	32191.77	28196.73
8	Net return	10280.16	12013.55	12650.78	8595.65	10751.29
9	Input-output	1.39	1.44	1.46	1.26	1.38
10	Cost - Benefit ratio	0.39	0.44	0.46	0.26	0.38

Table 5 indicates: farm profits family labour income, farm business income and farm investment income was observed on an average Rs. 20038.00, Rs. 20599.45, Rs.19724.20 per ha. Family labour income was maximum for large farmers,

farm business income was maximum for small farmers and farm investment income was maximum for large farmers, these incomes were minimum for marginal farmers.

Table 5: Measures of farm profits of wheat crop (Rs./ha.)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
1	Total cost (Cost C2)	26002.37	26740.33	27317.47	32191.77	28196.73
2	Net returns	10280.16	12013.56	12650.78	8595.65	10751.29
3	Family labour income (Gross income - Cost B1)	18631.52	20387.67	20867.83	21357.92	20038.00
4	Farm business income	19155.15	20939.04	21431.46	21936.84	20599.45
5	Farm investment income	17658.60	19791.77	20654.9	21298.25	19724.20
6	Gross returns	36282.54	38753.89	39968.25	40787.43	38948.03

Table 6: Income over different cost of wheat

S. No.	Income over different costs	Marginal	Small	Medium	Large	Overall
1	Income over A1	19155.15	20939.04	21431.46	21936.84	20599.45
2	Income over A2	19155.15	20939.04	21431.46	21936.84	20599.45
3	Income over B1	18631.52	20387.67	20867.83	21357.92	20038.00
4	Income over B2	11776.71	13160.82	13427.34	9234.24	11626.54
5	Income over C1	17134.97	19240.41	20091.27	20719.33	19162.75
6	Income over C2	10280.16	12013.56	12650.78	8595.65	10751.29
7	Income over C3	7679.92	9339.52	9919.03	5376.47	7931.62

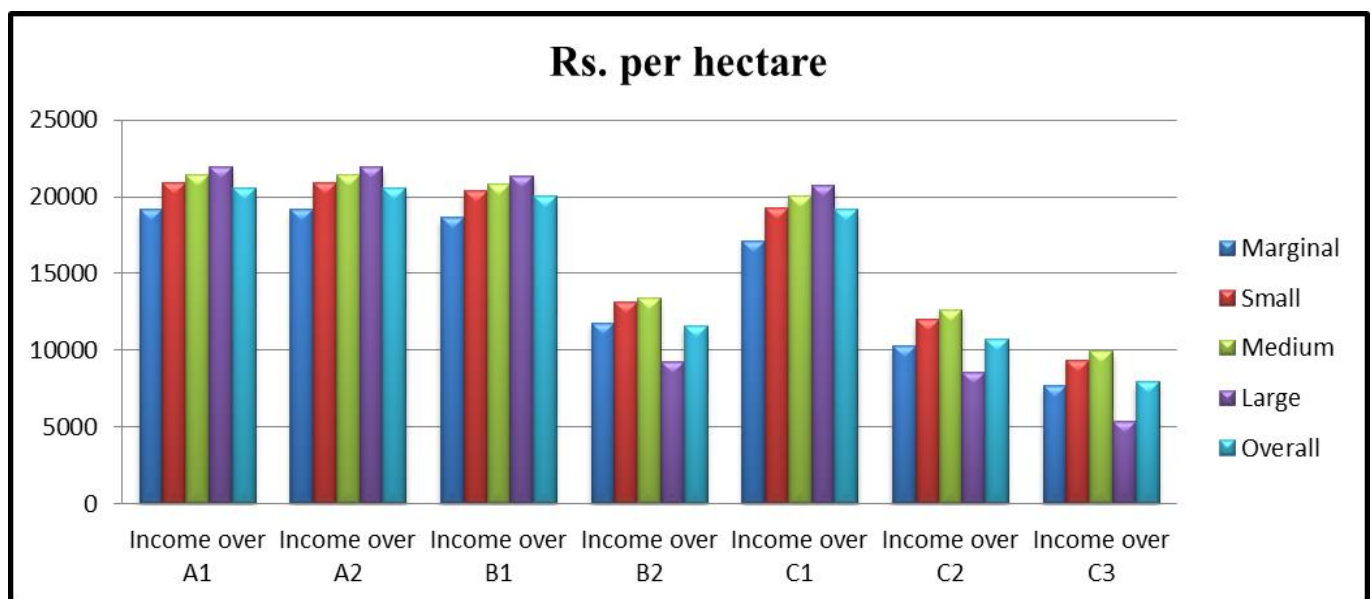


Fig 3: Income over different cost of wheat

Table 7 indicates: marketable surplus of wheat crop for different categories of farmers. It was observed that on an average overall only 5.10 qt. per ha. which was 26.37 percent of total production was utilized. Quantity of wheat crop was used as retained for seed production 1.03 qt./ha.(5.34

percent), quantity paid for wages 0.43 qt./ha. (2.25 percent) and consumption 3.63 qt./ha. (18.77 percent) and remaining quantity 14.25 qt./ha. (73.62 percent) called marketable surplus.

Table 7: Marketable surplus of wheat for sampled households (qt./ha.)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
1	Total production	18.06	19.27	19.86	20.26	19.36
		(100)	(100)	(100)	(100)	(100)
2	Retained for seed	1.08	1.03	1.02	1.01	1.03
		(5.98)	(5.34)	(5.13)	(4.98)	(5.34)
3	Quantity paid for wages	0.48	0.49	0.43	0.35	0.43
		(2.65)	(2.54)	(2.16)	(1.72)	(2.25)
4	Consumption	3.28	3.36	3.89	4.01	3.63
		(18.16)	(17.43)	(19.58)	(19.79)	(18.77)
5	Total quantity utilized	4.84	4.88	4.91	4.99	5.10
		(26.79)	(25.32)	(24.72)	(24.62)	(26.37)
	Marketable surplus	13.22	14.39	14.95	15.27	14.25
		(73.20)	(74.67)	(75.27)	(75.37)	(73.62)

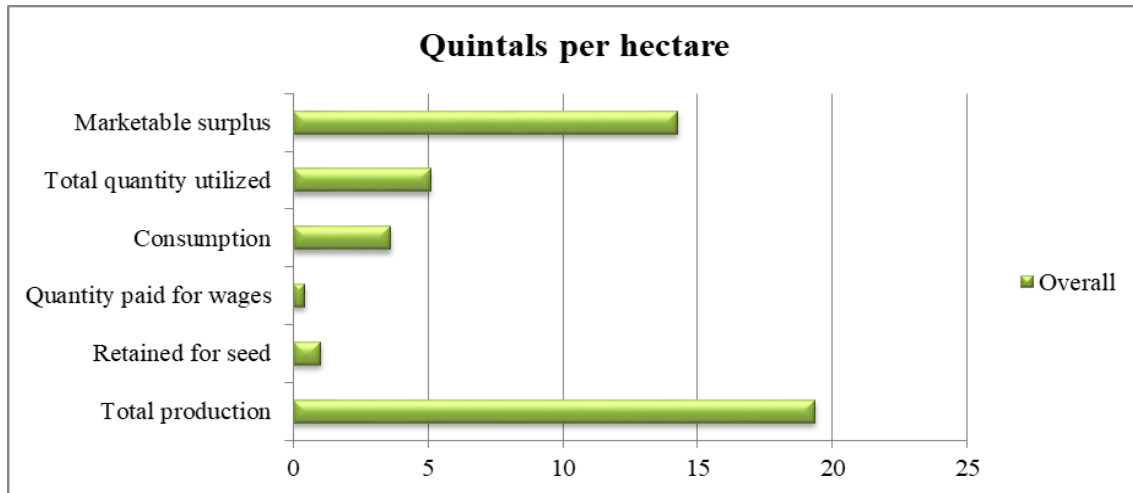


Fig 4: Marketable surplus of wheat

Table 8 indicates: disposable pattern of wheat in the study area, quantity of marketable surplus sold to the mandi and village traders / wholesalers. On an average maximum

quantity 8.79 qt./ha. sold to mandi and minimum quantity 5.66 qt./ha sold to village traders.

Table 8: Disposable pattern of wheat crop (qt./ha.)

S. No.	Particulars	Marginal	Small	Medium	Large	Overall
4	Marketable surplus	13.22	14.39	14.95	15.27	14.25
		(100)	100)	(100)	(100)	(100)
5	Mandi	8.34	8.87	8.92	9.06	8.79
		(63.08)	(61.64)	(59.66)	(59.33)	(61.71)
6	Village traders / wholesalers	4.88	5.52	6.03	6.21	5.66
		(36.91)	(38.35)	(40.33)	(40.66)	(39.70)

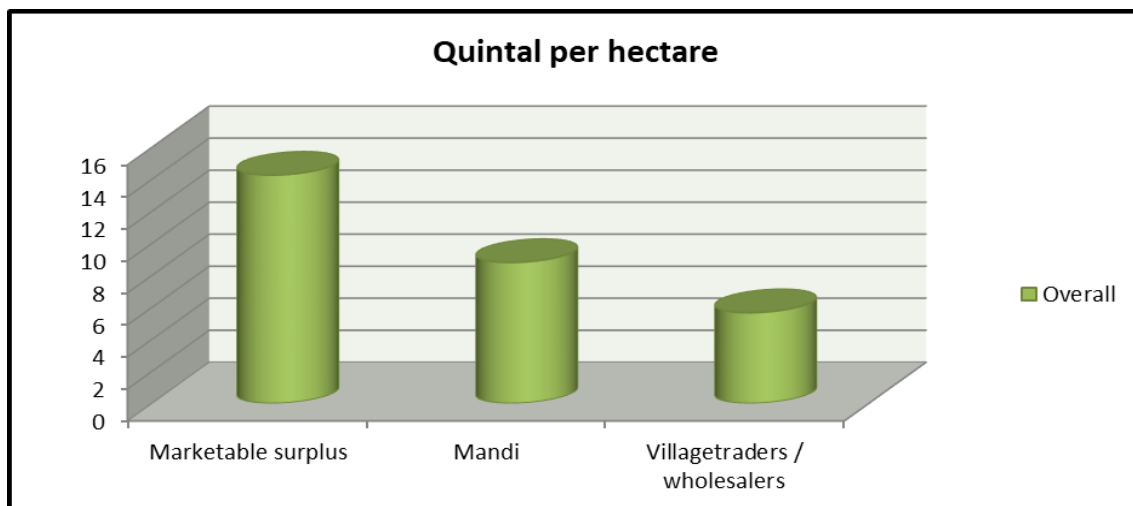


Fig 5: Disposable pattern of wheat

Marketing channels for wheat crop: Marketing of produce from producer to consumer by various channels which links producer to buyer and finally to the ultimate consumers. Marketing channel of wheat crop identified in the study area was presented below.

Channel-I: Producer – Village trader – Consumer

Channel-II: Producer – Wholesaler – Retailer – Consumer

Channel-III: Producer – Mandi (Balodabazar) – Processor – Wholesaler – Retailer – Consumer

Channel-IV: Producer – Mandi (Bhatapara) – Processor – Wholesaler – Retailer – Consumer

Conclusion

The main objective of this study is to analyze cost and return, marketable surplus and disposable pattern of wheat in Balodabazar – Bhatapara district. From CACP cost concept analysis indicated the cost incurred in per ha. wheat production was Rs.28196.73 per ha. and yield obtained 19.36 qt. per ha. which is maximum for large farms 20.26 qt. per ha. and minimum for marginal farms 18.06 qt. per ha. in crop year 2019-20. Due to Covid-19 crisis and nationwide lockdown at the time of harvesting affects the post harvest management, marketing of wheat crop, transportation channel and also uneven rainfall in crop season reduce the yield per ha. on an average per ha. overall input : output and Benefit : Cost ratio was observed 1:1.38 and 1:0.38, respectively and gross return observed Rs.38948.03 per ha. which was maximum for large farmers Rs.40787.43 per ha. Net return observed Rs.10751.29 per ha. The marketable surplus of wheat crop was observed on an average overall 5.10 qt. per ha. (26.37 percent of total production) was utilized, as retained for seed production 1.03 qt./ha.(5.34 percent), quantity paid for wages 0.43 qt./ha. (2.25 percent) and consumption 3.63 qt./ha. (18.77 percent) and remaining quantity 14.25 qt./ha. (73.62 percent) sold to the mandi and village traders / wholesalers was 8.79 qt./ha. and 5.66 qt./ha., respectively. Marketing channel of wheat crop identified in the study area was Channel-I: Producer – Village trader – Consumer, Channel-II: Producer – Wholesaler – Retailer – Consumer, Channel-III: Producer – Mandi – Processor – Wholesaler – Retailer – Consumer.

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