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## Comparative economic analysis of PDKV Sadhana and local variety of Paddy in Eastern Vidarbha Region

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### Abstract

The present study entitled “Comparative Economic Analysis of PDKV Sadhana and local variety of Paddy in Eastern Vidarbha Region” was undertaken in two districts of eastern vidarbha region i.e. Chandrapur and Bhandara. The primary data was collected from selected farmers by personal interview. Keeping in view the highest acreage under PDKV Sadhana and local variety of paddy. For the present study 60 paddy farmers who cultivated PDKV Sadhana as well as local variety of paddy were selected by random sampling. The primary data was collected for the agricultural year 2024-25. Per hectare total cost of cultivation of PDKV Sadhana and local variety of paddy i.e. cost 'C<sub>3</sub>' was Rs. 79500.81 and Rs. 75798.72, respectively. The input output ratio of the PDKV Sadhana and local variety of paddy at cost 'C<sub>3</sub>' was 1.52 and 1.32, respectively. Major constraints faced by farmers during PDKV Sadhana variety of paddy production was grain type of PDKV Sadhana, which was semi bold in nature and due to which farmers hesitate to use it, unavailability of farm labours during transplanting, lack of information of newly release variety of university, unavailability of seed in Krishi Vigyan Kendra. Similarly, the constraints faced by farmers during local variety of paddy production was lack of information about Minimum Support Price, Susceptible to pest and diseases followed by lack of awareness of mechanization used in farm and lack of irrigation facilities.

**Keywords:** Cost and returns, constraints, comparative economics, paddy

### Introduction

Paddy is one of the important cereal crops of the world and forms the staple food for more than 60 percent of population. The United Nations General Assembly, in a resolution declared in the year of 2004 as the “International Year of Rice”, which has tremendous significance to food security. It very eloquently upheld the need to heighten awareness about the role of rice in alleviating poverty and malnutrition (Barah and Pandey, 2005) <sup>[1]</sup>. It is not only a cereal crop but also a way of life in Asian countries. It contributes about 40 to 70 percent of the total calorie intake. Hence, sustained production and increased productivity of paddy crop is critical for food and nutritional security in Asia. Rice was cultivated in China from 6500 B.C. Rice is not only gained vital importance in indian agriculture, but also plays an important role in an economy of india while increasing the GDP of agriculture.

Paddy next to wheat and maize in global area, production and productivity. It is cultivated in 116 countries globally by 144 million farm family in around 162 million hectares producing 480 million tonnes milled rice. (Barah and Pandey, 2005) <sup>[1]</sup>. India covers 46.38 million hectares land under paddy cultivation with production of 130.29 million tonnes and productivity is 2809 kg/ha. In Maharashtra total area under paddy is 1523 lakh tonnes with production of 34.48 lakh tonnes of paddy and productivity of paddy is 2270 kg/ha. Area under Vidarbha region is 8.29 lakh hectares with production of 16.41 lakh tonnes of paddy.

Silent Features of PDKV Sadhana (SKL-3-1-41-8-33-15) Variety is follows,

1. Duration: 118-120 Days to seed maturity (Early Duration),
2. Long slender grains, having test weight– 25.7g
3. Dwarf stature - 99cm (91-106 cm)
4. Average grain yield – 5000 kg/ha.

5. Milling 71.70%, Good head rice recovery (55.74%) with intermediate AC (24.28%), good cooking and eating quality.

(Source: Dr. PDKV, Akola: Research Recommendations released during the year 2020-2021).

The present study was undertaken with the objectives: 1. To workout cost and returns of PDKV Sadhana and local variety of paddy production.

To identify constraints faced by farmers in production of PDKV Sadhana variety of paddy.

### Methodology

The multistage sampling technique was used for selection of sample. It was undertaken in the Eastern Vidarbha Region of Maharashtra state for the year 2024-25. Two districts are selected from Eastern Vidarbha Region. Two tehsils from each district were selected i.e., total four tehsils. From each tehsil 15 farmers of PDKV Sadhana and 15 farmers of local variety of paddy are selected for present study. As such total 60 farmers were selected.

To workout the cost of cultivation standard cost concepts i.e. Cost A<sub>1</sub>, Cost A<sub>2</sub>, Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub>, Cost C<sub>2</sub> and Cost C<sub>3</sub> were used.

The percentage analysis was carried out to identify the constraints faced by the farmers in production of PDKV Sadhana and local variety of paddy.

### Results and Discussion

It is revealed from Table 1 that per hectare cost of cultivation of PDKV Sadhana variety of paddy at cost 'A<sub>1</sub>' and cost 'A<sub>2</sub>' was Rs. 45175.10, cost B<sub>1</sub> 46611.40 and cost 'B<sub>2</sub>' is Rs. 66758.07, cost 'C<sub>1</sub>' is Rs. 52126.80, cost 'C<sub>2</sub>' is Rs. 72273.47 and cost 'C<sub>3</sub>' is Rs. 79500.81. The major share of the cost of cultivation goes towards cost 'A<sub>1</sub>' and cost 'A<sub>2</sub>' (56.82 percent). In costs 'A<sub>1</sub>' the major share was of hired human labour i.e. (23.92 percent) followed by machine charges (17.58 percent), fertilizers (4.77 percent), seed (2.76 percent), plant protection (2.16 percent), manures (1.35 percent) and irrigation charges (1.26 percent). All the above inputs are cash inputs for which farmers are required to pay immediately from their pocket. Cost 'B<sub>1</sub>' contributes (58.63 percent), and cost 'B<sub>2</sub>' contributes (83.97 percent) to the total cost i.e. cost 'C<sub>3</sub>'. The share of family labour was 6.93 percent. Per hectare yield obtained by PDKV Sadhana variety of paddy farmers was 47.89 quintal with a gross return of Rs. 121248.44.

**Table 1:** Per hectare cost of cultivation of PDKV Sadhana variety of Paddy

Sr. No.	Particulars		Unit/ ha	Input	Cost per input (Rs.)	Total cost (Rs.)	Percentage to cost C <sub>3</sub>
1.	Hired Human Labour	Male	Days	27.84	349.50	9726.40	12.23
		Female	Days	46.76	198.75	9293.79	11.69
2.	Machine Charges	Hired	Hours	14.15	988	13980.20	17.58
3.	Seed		Kg/Rs	39.88	55	2193.40	2.76
4.	Irrigation charges		Rs.			1004.81	1.26
5.	Manures		Qtl.	8.30	130	1079.00	1.35
6.	Fertilizers	N	Kg.	103.38	15.22	1573.44	1.97
		P	Kg.	50.32	33.50	1685.72	2.12
		K	Kg.	18.86	29	546.94	0.68
7.	Plant Protection		Rs.			1721.90	2.16
8.	Incidental charges		Rs.			550.00	0.69
9.	Repairing charges		Rs.			168.72	0.21
10.	Working capital (1 to 9)		Rs.			43524.32	54.74
11.	Int. on working capital @ 6%		Rs.			1305.73	1.64
12.	Depreciation		Rs.			283.65	0.35
13.	Land Rev. cess & other taxes		Rs.			61.40	0.07
14.	COST A <sub>1</sub> (10 to 13)		Rs.			45175.10	56.82
15.	Rent paid for leased land		Rs.			0.00	
16.	COST A <sub>2</sub> (14 to 15)		Rs.			45175.10	56.82
17.	Int. on Fix. Cap. @10%/annum		Rs.			1436.30	1.80
18.	COST B <sub>1</sub> (16 to 17)		Rs.			46611.40	58.63
19.	Rental value of owned land		Rs.			20146.67	25.34
20.	COST B <sub>2</sub> (18 to 19)		Rs.			66758.07	83.97
21.	Family Human Labour	a) Male	Days	12.32	301.21	3710.90	
		b)Female	Days	12.03	150	1804.50	
		Sub-Total				5515.40	6.93
22.	COST C <sub>1</sub> (18 + 21)		Rs.			52126.80	65.56
23.	COST C <sub>2</sub> (20+21)		Rs.			72273.47	90.91
24.	10% of Cost C <sub>2</sub>					7227.34	9.09
25.	COST C <sub>3</sub> (23+24)		Rs.			79500.81	100
26.	Yield of main produce per ha		Qtls.	47.89	2375	113738.75	
27.	Value of By-produce per ha.		Qtls.	55.32	135.75	7509.69	
28.	Main produce + By-produce					121248.44	
29.	Per qtl. Cost of produce at Cost C <sub>3</sub>		Rs.			1660.07	

It is revealed from Table 2, that per hectare cost of cultivation of local variety of paady at cost 'A<sub>1</sub>' and cost 'A<sub>2</sub>' was Rs. 44420.87, cost 'B<sub>1</sub>' was Rs. 45833.83 and cost 'B<sub>2</sub>' was Rs. 62493.27, cost 'C<sub>1</sub>' was Rs. 52248.49, cost

'C<sub>2</sub>' was Rs. 68907.93 and cost 'C<sub>3</sub>' was Rs. 75798.72. The major share of the cost of cultivation goes towards cost 'A<sub>1</sub>' and A<sub>2</sub> (58.60 percent). In costs 'A<sub>1</sub>' the major share

was of hired human labour i.e. (24.83 percent) followed by machine charges (17.84 percent), fertilizers (4.99 percent), plant protection (3.28 percent), seed (2.42 percent), manures (1.29 percent) and irrigation charges (0.87 percent). All the above inputs are cash inputs for which farmers are required to pay immediately from their

pocket. Cost 'B<sub>1</sub>' contributes (60.45 percent), and cost 'B<sub>2</sub>' contributes (82.43 percent) to the total cost i.e. cost 'C<sub>3</sub>'. The share of family labour was 8.46 percent. Per hectare yield obtained by local variety of paddy farmers was 40.37 quintal with a gross return of Rs. 100284.

**Table 2:** Per hectare cost of cultivation of local variety of Paddy

Sr. No.	Particulars		Unit/ ha	Input	Cost per input (Rs.)	Total cost (Rs.)	Percentage
1.	Hired Human Labour	Male	Days	28.01	349.50	9789.50	12.91
		Female	Days	45.23	199.80	9036.95	11.92
2.	Machine Charges	Hired	Hours	15.03	900	13527.00	17.84
3.	Seed		Kg/Rs	43.75	42	1837.50	2.42
4.	Irrigation charges		Rs.			662.53	0.87
5.	Manures		Qtl.	7.50	130	975.00	1.29
6.	Fertilizers	N	Kg.	105.65	15.22	1607.80	2.12
		P	Kg.	50.48	33.50	1691.08	2.23
		K	Kg.	16.78	29	486.62	0.64
7.	Plant Protection		Rs.			2489.87	3.28
8.	Incidental charges		Rs.			455.25	0.60
9.	Repairing charges		Rs.			267.89	0.35
10.	Working capital (1 to 9)		Rs.			42816.99	56.47
11.	Int. on working capital @ 6%		Rs.			1284.51	1.69
12.	Depreciation		Rs.			264.81	0.35
13.	Land Rev. cess & other taxes		Rs.			54.56	0.07
14.	COST A1 (10 to 13)		Rs.			44420.87	58.60
15.	Rent paid for leased land		Rs.			0.00	
16.	COST A2 (14 to 15)		Rs.			44420.87	58.60
17.	Int. on Fix. Cap. @ 10%/annum		Rs.			1412.96	1.86
18.	COST B1 (16 to 17)		Rs.			45833.83	60.45
19.	Rental value of owned land		Rs.			16659.44	21.97
20.	COST B2 (18 to 19)		Rs.			62493.27	82.43
21.	Family Human Labour	a) Male	Days	14.47	297.04	4298.16	5.67
		b)Female	Days	14.11	150	2116.50	2.79
		Sub-Total				6414.66	8.46
22.	COST C1 (18 + 21)		Rs.			52248.49	68.93
23.	COST C2 (20+21)		Rs.			68907.93	90.87
24.	10% of Cost C2					6890.79	9.09
25.	COST C3 (23+24)		Rs.			75798.72	100
26.	Yield of main produce per ha	Produce	Qtls.	40.37	2321	93698.77	
27.	Value of By-produce per ha.	Produce	Qtls.	48.51	135.75	6585.23	
28.	Main produce + By-produce					100284.00	
29.	Per qtl. Cost of produce at Cost C3		Rs.			1877.60	

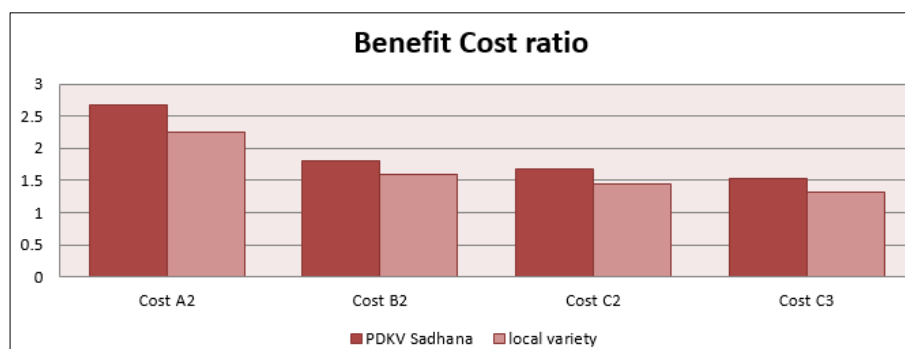
**Table 3:** Per hectare cost and returns from PDKV Sadhana and local variety of paddy production (Rs./ha)

Sr. No.	Particulars	Total (Paddy)	
		PDKV Sadhana	Local Variety
1.	Yield of Main Produce(qtl./ha)	47.89	40.37
2.	Price/qtl.	2375.00	2321.00
3.	Value of main produce	113738.75	93698.77
4.	Yield of By-produce(qtl./ha)	55.32	48.51
5.	Price of By-produce per qtl.	135.75	135.75
6.	Value of By-produce	7509.69	6585.23
4.	Gross Returns	121248.44	100284.00
5.	Cost of Cultivation at		
a)	Cost 'A <sub>1</sub> '	45175.10	44420.87
b)	Cost 'A <sub>2</sub> '	45175.10	44420.87
c)	Cost 'B <sub>1</sub> '	46611.40	45833.83
d)	Cost 'B <sub>2</sub> '	66758.07	62493.27
e)	Cost 'C <sub>1</sub> '	52126.80	52248.49
f)	Cost 'C <sub>2</sub> '	72273.47	68907.93
g)	Cost 'C <sub>3</sub> '	79500.81	75798.72
6.	Net return at		
a).	Cost 'A <sub>1</sub> '	76073.34	55863.13
b)	Cost 'A <sub>2</sub> '	76073.34	55863.13
c)	Cost 'B <sub>1</sub> '	74637.04	54450.17
d)	Cost 'B <sub>2</sub> '	54490.37	37790.73

e)	Cost 'C <sub>1</sub> '	69121.64	48035.51
f)	Cost 'C <sub>2</sub> '	48974.97	31376.07
g)	Cost 'C <sub>3</sub> '	41747.63	24485.28
7.	<b>Input Output ratio at</b>		
a)	Cost 'A <sub>1</sub> '	2.68	2.25
b)	Cost 'A <sub>2</sub> '	2.68	2.25
c)	Cost 'B <sub>1</sub> '	2.60	2.18
d)	Cost 'B <sub>2</sub> '	1.81	1.60
e)	Cost 'C <sub>1</sub> '	2.32	1.91
f)	Cost 'C <sub>2</sub> '	1.67	1.45
g)	Cost 'C <sub>3</sub> '	1.52	1.32

It is revealed from Table 3 that, for PDKV Sadhana on average gross returns worked out to Rs. 121248.44. The net returns obtained at various costs were Rs. 76073.34 at cost 'A<sub>1</sub>' and costs 'A<sub>2</sub>', Rs. 74637.04 at cost 'B<sub>1</sub>', Rs. 54490.37 at cost 'B<sub>2</sub>', Rs. 69121.64 at cost 'C<sub>1</sub>', Rs. 48974.97 at cost 'C<sub>2</sub>' and Rs. 41747.63 at cost 'C<sub>3</sub>'. This means the PDKV Sadhana variety of paddy crop appeared to be good for monitory benefits. The input-output ratio at cost 'C<sub>3</sub>' was 1:1.52. This indicates that on one rupee invested in the

cultivation of PDKV Sadhana variety of paddy earned Rs. 1.52. Similarly, for local variety of paddy gross returns worked out to Rs. 100284. The net returns obtained at various costs are Rs. 55863.13 at cost 'A<sub>1</sub>' and costs 'A<sub>2</sub>', Rs. 54450.17 at cost 'B<sub>1</sub>', Rs. 37790.73 at cost 'B<sub>2</sub>', Rs. 48035.51 at cost 'C<sub>1</sub>', Rs. 31376.07 at cost 'C<sub>2</sub>' and Rs. 24485.28 at cost 'C<sub>3</sub>'. The input-output ratio at cost 'C<sub>3</sub>' was 1:1.32. This indicates that on one rupee invested in the cultivation of local variety of paddy earned Rs. 1.32.



**Fig 1:** Benefit cost ratio of PDKV Sadhana and local variety of Paddy at various cost concepts

**Constraints faced by farmers in production of PDKV Sadhana variety of paddy:** All selected paddy farmers were interviewed for the problems they are facing while

production of PDKV Sadhana and local variety of paddy. The information regarding the important problems faced by the farmers is presented in following table.

**Table 4:** Constraints faced by farmers in production of PDKV Sadhana variety of paddy

Sr. No.	Constraints	Number of farmers faced the problem (N = 60)	Percentage to total farmers	Rank
1.	The grain type of PDKV Sadhana is semi bold due to which farmers are hesitate to use it	52	86.66	I
2.	Unavailability of farm labours during transplanting	48	80.00	II
3.	Lack of information of newly release variety of university	47	78.33	III
4.	Unavailability of seed in krishi vigyan kendra	42	70.00	IV
5.	Lack of awareness of technology	33	55.00	V
6.	Low price to produce in market due to its semi bold nature of grain type	25	41.66	VI

From Table 4. it is observed that the problem of grain type of PDKV Sadhana, which is semi bold in nature and due to which farmers are hesitate to use it, is the major problem which is expressed as 86.66 percent and rank I. Unavailability of farm labours during transplanting is expressed as 80.00 percent and rank II followed by lack of information about newly release variety of university is expressed with 78.33 percent and rank III and so on.

### Conclusion

With the foregoing discussion, the following conclusion were drawn.

The production of PDKV Sadhana and local variety of paddy were 47.89 q/ha and 40.37 q/ha, respectively. The

production was more in PDKV Sadhana variety by 7.52 q/ha than that of local variety of paddy production. The cost of cultivation i.e. cost C<sub>3</sub> for PDKV Sadhana and local variety of paddy farmers are Rs. 79500.81 and Rs. 75798.72, respectively. The output input ratio for PDKV Sadhana and local variety of paddy are 1.52 and 1.32, respectively. Therefore, PDKV Sadhana is more profitable than local variety of paddy. The major constraints faced by PDKV Sadhana variety of paddy farmers in production was grain type of PDKV Sadhana, which was semi bold in nature and due to which farmers hesitate to use it. Unavailability of farm during transplanting. Lack of information of newly release variety of university, etc.

**References**

1. Hile RB, Darekar AS, Dattarkar SB. Economic analysis and impact assessment of production technology of paddy of Konkan region in Maharashtra. *Internat J Com Bus Manage*. 2015;8(2):143-152.
2. Netam OK, Sahu LK, Seth MK. A consumption pattern of Agrochemicals and cost and returns of Kharif paddy for variety MTU-1010 in Bastar Plateau of Chhattisgarh, India. *Int J Life Sci*. 2017;5(1):2320-7817.
3. Shigwan AS, Meshram NA. Constraints Faced by The tribal farmers in rainfed rice production in Kokan Region – A Village Level Study. *Bull Environ Pharmacol Life Sci*. 2019;8(4):49-51.
4. Pathak AK, Ramchandra, Chaturvedi A. Economic analysis of paddy cultivation in district Prayagraj of Uttar Pradesh. *Pharma Innov J*. 2021;10(7):803-806.
5. Barah BC, Pandey S. Rainfed rice production systems in Eastern India: an on-farm diagnosis and policy alternatives. *Indian journal of agricultural Economics*. 2005;60(1).