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Economics of production of soybean in Wardha district

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Abstract

The present study was undertaken in Wardha district of Vidharbha region. From each tehsil two villages were selected purposively, on the basis of highest area under soybean cultivation. From each village 20 farmer were selected randomly. At overall total 120 farmers were selected for present study. The selected 120 farmers were under sequently classified as small (up to 2), medium (2.01 to 4.00) and large (4.0 to above) on the basis of size holding. Per hectare cost of cultivation of low adopter at cost 'A', 'B' and 'C' were Rs. 17255.11, Rs. 27490.89 and Rs. 29305.39 respectively. Per hectare cost of cultivation of medium adopter at cost 'A', cost 'B' and cost 'c' were Rs.19220.63, Rs. 26886.20 and Rs. 27918.44. Per hectare cost of cultivation of high adopter at cost 'A', cost 'B' and cost 'c' were Rs.21505.82, Rs. 31398.44 and Rs. 32061.48. Per hectare cost of cultivation of overall at cost 'A', cost 'B' and cost 'c' were Rs.19327.14, Rs. 28591.79 and Rs. 29761.71. At overall level the B:C ratio at cost 'C' was 1:1.48.

Keywords: Economics, production, soybean, cost, cultivation, farmers

Introduction

Oilseed crop are most important commercial crop in India. Edible oil are next to food grain in India. Oilseed form the second largest agricultural commodity after cereals sharing 14.87 per cent of gross cropped area and accounting for nearly 1.4 per cent national product and seven per cent of the value of agricultural product. Soybean, the number one oilseed crop in the world has recently occupied an important place in the edible oil and agriculture economy of the country. Soybean (*Glycine max. L*) Belong to the family of leguminaceae is well known as oilseed and pulse crop which is richest and cheapest source of high quality mineral, protein, vitamin and fat. It supplies most of the nutritional constituents essential for human growth. Hence, soybean is called as “wonder crop”, “golden crop” or “miracle crop”. It also known as golden of 20th century due to its easy cultivation, high cost benefit ratio, less requirement of nitrogenous fertilizer etc. being a leguminous crop. It is soil erosion resistant crop and suited for most of the soil. It help in maintaining the soil fertility by fixing atmospheric nitrogen through root nodule. It fixed the amount of nitrogen range from 15 to 26.7 kg/ha.

In India, major soybean growing states are Madhya Pradesh, Maharashtra, Rajasthan, Andhra Pradesh, Karnataka and Chhattisgarh. Among these states Maharashtra ranks second in acreage under soybean after Madhya Pradesh. In Maharashtra it constitutes 38.704 lakh hectares area producing 48.565 lakh MT with the productivity 1255 kg/ha in 2013. Area under soybean in Wardha district is 1.785 lakh hectares with production 2.456 lakh MT with the productivity of 1376 kg per hectares in 2014-15.

Materials and Methods

The present study was undertaken in Wardha district of Vidharbha region. The district was selected purposively. From each tehsil two villages were selected purposively, on the basis of highest area under Soybean cultivation. From each village 20 farmer were selected randomly. At overall total 120 farmers were selected for present study. A schedule was designed for data collection by keeping the objectives of study, in view. The data pertaining to the year 2014-2015 on various aspect of Soybean cultivation, economics of production and other relevant information were collected.

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Results and Discussion

Per hectare input utilization for soybean crop

The pattern of utilization of resource by farmer indicate the degree of management of resource, their choice and the decision making. Besides this, it indicate the level of technology adopted by the farmer. The farmer required to spend on various input like seed, manure, fertilizer, human labour and bullock labour. Therefore, it is necessary to know the pattern of expenditure on various input on per hectare

basis. The per hectare input utilization for a soybean crop are presented in Table 1.

It is observed from Table 1. That, high adopter group in physical the seed requirement is higher as compared to other group. At overall level the quantity of seed is 72.21 Kg/ha. Highest manure was used by high adopter farmer (3.19 Qlt /ha) farmers. At overall level the quantity of human labour was 36.01 days used for production of soybean crop.

Table 1: input utilization pattern of sample group

S. No.	Particulars	Low adopter (n=20)	Medium Adopter (n=88)	High adopter (n=12)	Overall (n=120)
1	Seed	68.02	68.41	80.21	72.21
2	Manure	3.03	1.83	3.19	2.68
3	Fertilizer				
	N	23.54	20.81	20.65	21.66
	P	69.06	67.05	60.21	65.44
	K	19.66	17.89	10.83	16.12
4	Hired Labour (days)				
	a. Male	14.80	13.00	16.08	14.62
	b. Female	14.20	13.47	17.17	14.95
5	Family Labour (day)				
	a. Male	6.23	3.26	2.17	3.88
	b. Female	3.77	2.39	1.52	2.56
6	Bullock Labour (day)				
	a. Hired	0.82	0.37	1.52	0.90
	b. Owned	1.88	2.27	1.95	2.03
7	Machine (Hours)				
	a. Hired	0.24	0.13	1.30	0.55
	B. Owned	0.00	0.25	1.08	0.44

(Figures in parenthesis indicates the percentage to the total)

At an overall level 103.22 Kg/ha fertilizer was used. Highest fertilizer used by low adopter farmer (112.26 Kg/ha) followed by medium (105.75 Kg/ha) and then high adopter group (91.69 Kg/ha).

Among the different size group, the highest human labour was utilized by low adopter group (39.00 days) where as lowest human labour was used by medium adopter group (36.94 days).

2. Per hectare cost of cultivation of soybean

The share each item the total cost provides necessary due to economizing cost. The cost has determined on the basis of standard cost concept i.e. cost 'A', cost 'B' and cost 'C', the different cost concept have different utilities in research. Here and attempt has been made to estimate the figures of cost of soybean crop in the study area and presented in succeeding Tables.

Table 2|: Per hectare cost of cultivation of soybean for overall adopter

S. No.	Particulars		Units	Units Required	Price Per unit	Cost in Rs.	Percent To total
1	Hired Human Labour	Male	DAYS	14.62	200.40	2929.82	9.84
		Female	DAYS	14.95	150.00	2242.54	7.53
		Total	DAYS	29.57	174.92	5172.36	17.38
2	Bullock Labour	Hired	DAYS	0.90	705.73	635.16	2.13
		Owned	DAYS	2.03	702.97	1427.03	4.79
		Total	DAYS	2.93	703.82	2062.19	6.93
3	Machine	Hired	DAYS	0.55	356.85	196.27	0.66
		Owned	DAYS	0.44	346.52	152.47	0.51
		Total	DAYS	0.99	352.26	348.74	1.17
4	Seed		KGS.	72.21	45.00	3249.74	10.92
5	Manure		QTLS.	2.68	145.21	389.16	1.31
6	Fertilizer	N	KGS.	21.66	27.51	595.92	2.00
		P	KGS.	65.44	32.50	2126.99	7.15
		K	KGS.	16.12	37.40	602.87	2.03
		Total				3325.78	11.17
7	Irrigation	Cost	RS.			0.00	0.00
8	Incidental	Cost	RS.			716.49	2.41
9	Plant protection	Cost	RS.			876.33	2.94
10	Repairs	Cost	RS.			753.16	2.53
11	Depreciation	Cost	RS.			888.72	2.99
12	Land Revenue	Cost	RS.			632.32	2.12
13	Int. On Working Capital	Cost	RS.			912.15	3.06
14	COST "A"		RS.			19327.14	64.94
15	Rental Value Of Land		RS.			8739.28	29.36
16	Int. On Fixed Capital		RS.			525.37	1.77
17	COST "B"		RS.			28591.79	96.07

18	Family Human Labour	Male	DAYS	3.88	202.41	785.37	2.64
		Female	DAYS	2.56	150.21	384.55	1.29
		Total	DAYS	6.44	181.66	1169.92	3.93
19	COST"C"		RS.			29761.71	100.00
20	Yield	Main	QTLS.	19.12	2188.05	41835.58	
		Bye	QTLS.	5.78	409.69	2368.03	
21	Value Of Total Produce		RS.			44203.61	
22	Per Qtl. Cost Of Production					1432.72	

(Figure in parenthesis indicate percentage to cost 'C')

The per hectare cost of cultivation of soybean grown by the overall 120 adopter farmer is presented in Table 2. It is revealed from the Table 2. That, per hectare cost of cultivation at cost 'A', cost 'B' and cost 'c' were Rs.19327.14, Rs. 28591.79 and Rs. 29761.71 respectively. The major share of cost of cultivation goes towards cost 'A' (64.94 per cent). In cost 'A' share of hired human labour were 17.38 per cent, fertilizer 11.17 per cent, seed 10.92 per cent and bullock labour 6.93 per cent indicating that, all the above input are cash input for which farmer required to pay immediately from his pocket. Cost 'B' contributes to 96.07 per cent. The share of family labour was 3.93 per cent. The per hectare yield obtained by over adopter was 19.10 quintal with gross return of Rs.44203.61. In case of overall adopter the per quintal cost of production was Rs.1432.72.

3. Estimation of yield gap in soybean production

The study was undertaken with the overall objectives of estimating the yield gap in soybean production, the result obtained are presented in Table 3.

Table 3. Presents the yield performance of soybean under different field situation. It could be observed from the Table 3. That, there existed a sizeable gap in the soybean productivity between the research station, demonstration plots and the sample farmer's field.

Table 3: Estimation of yield gap in soybean production (Kg/ha)

S. No.	Particulars	Yield
1	Potential yield (Yp)	2300
2	Potential farm yield (Yd)	2156
3	Actual yield (Ya)	
	Low adopter	1793
	Medium adopter	1850
	High adopter	2094
	Overall	1912
4	Yield gap-I (Yp-Yd)	144
5	Yield gap-II (Yd-Ya)	
	Low adopter	363
	Medium adopter	306
	High adopter	62
	Overall	244
6	Total Yield Gap (Yp-Ya)	
	Low adopter	507
	Medium adopter	450
	High adopter	206
	Overall	388

It is observed from Table 3. That, soybean yield realized on the research station (2300 Kg/ha) and on demonstration plots (2156 Kg/ha) were sufficiently higher than farmer field (1912 Kg/ha). Higher yield level on research station and demonstration plots were attributed to the fact that the experiments were conducted on scientific lines and are equipped with all the requisite resources including the technical input on the research station, while the demonstration trial are carried out under the supervision of agricultural extension workers.

The magnitude of total yield gap worked out to be 388 kg/ha. This comprises of relatively higher magnitude of Yield Gap-II (244 kg/ha) than Yield Gap-I (144 kg/ha). The higher magnitude of Yield Gap-II may be attributed to the significant environmental differences and partly to the non-transferable components of technology like cultural practices (like differences in taking up of timely land preparation, maintaining optimum plant spacing and density, plant nutrient application, plant protection measure etc.) between the demonstration plots and research station.

Conclusion

On the basis of results obtained from the study, following conclusions are drawn. Per hectare cost of cultivation of overall at cost 'A', cost 'B' and cost 'C' were Rs.19327.14, Rs. 28591.79 and Rs. 29761.71 respectively. The per hectare yield obtained by over adopter was 19.10 quintal with gross return of Rs.44203.61. In case of overall adopter the per quintal cost of production was Rs.1432.72. The magnitude of total yield gap worked out to be 388 kg/ha. There is higher magnitude of Yield Gap-II than Yield Gap-I.

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