

RESEARCH ARTICLE :

Comparative economics of production and marketing of MAUS-71 and JS-335 of soybean varieties of Parbhani district

■ H.H. KAUSADIKAR, S.H. KAMBLE AND BANDI SRIKANTH

ARTICLE CHRONICLE :

Received :
15.07.2017;

Accepted :
30.07.2017

KEY WORDS :

Socio economic characteristics, Profitability, Resource use efficiency

SUMMARY : The study compared the economic performance of MAUS-71 and JS-335 soybean in Parbhani district, State of Maharashtra, with the aim of assessing the determinants of its profitability. Primary data obtained from a sample of 120 farmers by stratified and multi-staged random sampling from four villages were analyzed using percentages, means, gross margin, net profit, marginal product, optimum resource use efficiency, return to scale and F- value. Results revealed gender inequality; Majority of MAUS-71 respondents were in above 45 years age group and in case of JS-335 respondents were middle age group. Net profit obtained by cultivation MAUS-71 Rs. 24671.09 than that of JS-335 was 19958.7; The R² value indicated that 79 per cent and 82 per cent variations in MAUS-71 and JS-335 varieties of soybean, respectively. Results also showed that area, phosphorus, family labour, were highly significant at one per cent levels and positively correlated with farmers' profit in MAUS-71 soybean; while in case of JS-335, area, seed, plant protection and family labour were positively significant at one per cent level. The study concludes that cultivation of MAUS-71 variety of soybean was found to be profitable over JS-335 variety.

How to cite this article : Kausadikar, H.H., Kamble, S.H. and Srikanth, Bandi (2017). Comparative economics of production and marketing of MAUS-71 and JS-335 of soybean varieties of Parbhani district. *Agric. Update*, 12(TECHSEAR-5) : 1318-1322; DOI: 10.15740/HAS/AU/12.TECHSEAR(5)2017/1318-1322.

BACKGROUND AND OBJECTIVES

Soybean (*Glycine max* L.) is an important crop grown in India for dual purpose that is oil seed and legume crop, contributing significantly to income security and the nutritive diets of many households. Soybean contains vitamin A in resource poor diet. It was introduced in India in 1970-71, mainly for rich protein and edible oil content. Soybean was introduced in Maharashtra during the year

1984-85. It was become popular because it is short duration crop (90-110 days) with higher productivity as compared to other pulse crops. In the year of 2013-14, in India, Soybean occupied an area of about 120.327 lakh ha with production 129.83 lakh MT and productivity was 1079 kg per ha. In annual soybean production was 5.4 million tonnes. The area under soybean was 38.704 lakh ha in Maharashtra with production of 48.56 lakh

Author for correspondence :

H.H. KAUSADIKAR
Department of
Agricultural Economics,
College of Agriculture,
LATUR (M.S.) INDIA
Email :
harshakausadikar@
gmail.com

See end of the article for authors' affiliations

MT and average productivity was 1255 kg per ha in MT. In Marathwada region area under soybean was 14.018 lakh ha with production of 17.903 lakh MT and average productivity was 2416 kg per ha. In Parbhani district area under soybean was 1.943 lakh ha with production of 3.017 lakh MT and average productivity was 1553 kg per ha.

Satpute (2000) studied the soybean crop in Parbhani and Hingoli district. The study revealed that at overall level cost-A, cost-B, cost-C were Rs. 9639.36, Rs. 1257.37 and Rs. 13664.64, respectively. Main produce was 14069.15 at perfect gross return was Rs. 100975.14.

Chavan (2008) studied economic analysis of semi medium farm in Marathwada region of Maharashtra, result revealed that cost of production was Rs. 11750.53 per ha whereas, expenditure incurred on cost-A was 68.36 per cent and cost-B was 90.09 of the total cost. It was seen that the main produce and by produce was 12.06 quintals and 9.88 quintals per hectare, respectively. The input- output ratio was 1.24 which indicated that soybean cultivation was profitable enterprise.

RESOURCES AND METHODS

Multistage sampling design was adopted for present study the soybean crop was selected. In first stage Parbhani district was selected purposively. In second stage four taluks viz., Parbhani, Purna, Gangakhed, and Jintur were selected. In third stage from each talukas two villages was selected. List of farmers soybean growers will be collected from revenue record of each village and from each village five cultivators of each variety growing soybean will be selected constituting a total sample size 120.

Analytical methods:

The techniques like frequency, distribution and percentage from a tabular analysis and functional analysis were used to analyse the data in the present study.

Tabular analysis:

The first objective *i.e.* to study socio-economic characters of soybean grower was achieved by frequency distribution and percentage method.

Concept of cost:

The second objective *i.e.* to determine per cent hectare profitability of soybean farm was achieved by tabular analysis with standard cost concepts of cost-A,

cost-B and cost-C. This tabular analysis comprised of arithmetic mean, percentage, and ratio.

Functional analysis :

Third objective, resource productivity and resource use efficiency in soybean production was estimated by fitting Cobb- Douglas to the per farm input output data.

OBSERVATIONS AND ANALYSIS

Comparative results of MAUS-71 and JS-335 varieties of soybean are presented and discussed in this chapter under the following heads.

- Socio-economic characteristics of MAUS-71 and JS-335 soybean growers.
- Costs and returns in MAUS-71 and JS-335 soybean varieties cultivation.
- Resource productivity and resource use efficiency in MAUS-71 and JS-335 soybean production.

Socio-economic characteristics of MAUS-71 and JS-335 soybean growers :

The socio-economic characters such as, age of farmer, education, family size, occupation level, and land

Table 1 : Socio-economic characters of MAUS-71 and JS-335 soybean growers (n=60)

Particulars	MAUS-71		JS-335	
	Number	Per cent	Number	Per cent
Age (year)				
Upto 30 yrs	2	3.33	3	5
30-45 yrs	20	33.33	35	58.33
Above 45 yrs	38	63.33	22	36.66
Education				
Illiterate	16	26.06	19	31.66
Primary	8	13.33	11	18.33
Secondary	25	41.66	21	35
College	11	18.33	9	15
Family size (No.)				
Male	3.4	-	2.78	-
Female	3.2	-	3.16	-
Children	1.93	-	1.33	0
Occupation level				
Only Agriculture	44	73.33	35	58.33
Agriculture and other	16	26.66	25	41.66
Land holding (ha)				
Upto 2 ha	2	3.33	3	5
2 ha to 4 ha	42	70.00	43	71.66
Above 4 ha	16	26.66	14	23.33

holding of the selected sample were studied and comparative results of MAUS-71 and JS-335 growers are presented in Table 1.

In respect to the family size of soybean growers 3.4 male, 3.2 female and 1.94 children were observed in the family of MAUS-71 growers. While 2.78 male, 3.16 female and 1.33 children were observed in the family of JS-335 growers.

The agriculture was main occupation of 73.33 per cent MAUS-71 growers while 58.33 per cent JS-335 growers were engaged in only agriculture business. Maximum MAUS-71 and JS-335 growers (70.00% and 71.66%) were form in category of medium farmers which total land holding ranged in between 2-4 hectares, while 26.66 per cent MAUS-71 growers and 23.33 per cent JS-335 growers were observed in large farmers category which total holding was above 4 hectares.

Costs and returns and profitability in MAUS-71 and JS-335 soybean varieties cultivation :

In cultivation of MAUS-71 variety 36.47 mandays of hired human labour, 19.78 mandays of family human labour, 8.21 pairs of bullock labour, 5.25 hours of machine labour, 73.36 kg of seed, 19.82 quintal of manure, 18 kg of nitrogen, 35.8 kg of phosphorus, 22.2 kg of potash and 0.90 litres of plant protection chemicals were utilized. Where as in cultivation of JS-335 variety 35.13 mandays of hired human labour, 21.56 mandays of family human labour, 7.97 pairs of bullock labour, 5.35 hours of machine

labour, 72.86 kg of seed, 20.9 quintal of manure, 21.01 kg of nitrogen (Table 2).

With respect to the output it is observed that yield of MAUS-71 was higher by 1.52 quintal while that of JS-335 was 15.98 quintal same trend was observed in case of by produce of both varieties

Cost of cultivation of MAUS-71 and JS-335 soybean production :

It is seen from Table 3 that per hectare cost of cultivation of MAUS-71 was Rs. 38342.75 and that of JS-335 was Rs. 37229.31. It indicated that cost of cultivation of MAUS-71 was higher by Rs.1113.44 than JS-335.

Per hectare profitability in MAUS-71 and JS-335 soybean cultivation :

It is observed that Table 4 that per hectare gross income with respective to MAUS-71 was obtain to the tune of Rs. 63013.84 and Rs. 57188.01 as that of JS-335 variety. Farm business income obtained from cultivation of MAUS-71 was greater by Rs. 5439.7 than that of JS-335. Family labour income was more in the cultivation MAUS-71 by Rs.4467.07 than that of JS-335. Net profit was greater on MAUS-71 farm by 4712.39. Net profit obtained by cultivation MAUS-71 Rs. 24671.09 than that of JS-335 was Rs.19958.7.

Output input ratio was estimated to the tune of 1.64 on MAUS-71 farm and 1.54 on JS-335 farm. The per quintal production cost of MAUS-71 was Rs. 2191.01 and Rs. 2329.7.

Resource productivity and resource use efficiency in MAUS-71 and JS-335 soybean production :

Estimates of Cobb-Douglas function of MAUS-71 and JS-335 soybean are presented in both tables. MAUS-71 regression co-efficient of area, phosphorus and family labour were positively significant at 1 per cent level. Manure, machine labour were negatively significant at 1 per cent level of probability. It indicated that if area under MAUS-71 variety increases by 1 per cent than yield of soybean increases by 2.49 per cent. In case of JS-335 soybean regression co-efficient area, seed, plant protection and family labour were positively significant at 1 per cent level. area, seed, plant protection and family labour were positively significant at 1 per cent level of probability while hired labour and machine labour were

Table 2 : Per hectare physical inputs and outputs in MAUS-71 and JS-335 soybean cultivation

Particulars	Unit	MAUS-71	JS-335
Input			
Hired human labour	manday	36.47	35.13
Family human labour	manday	19.78	21.56
Bullock labour	pair day	8.21	7.97
Machine labour	hour	5.55	5.35
Seeds	kg	73.36	72.86
Manure	q	19.82	20.9
Fertilizer			
Nitrogen	kg	18	21.01
Phosphorus	kg	35.8	35.48
Potash	kg	22.2	22.9
Plant protection	lit	0.9	1.04
Output			
Main produce	q	17.5	15.98
By produce	q	2.2	1.46

Table 3 : Per hectare cost of cultivation of MAUS-71 and JS-335 soybean cultivation

Particulars	MAUS-71		JS-335	
	Amount (Rs./ha)	Per cent	Amount (Rs./ha)	Per cent
Hired human labour	7131.19	19.15	6833.42	18.35
Bullock labour	2876.19	7.72	2790	7.50
Machine labour	2497.95	6.70	2410.71	6.47
Seeds	4156.99	11.20	4128.08	11.08
Manure	1982.31	5.32	2090	5.61
Fertilizer				
N	231.82	0.62	270.24	0.72
P	1655.87	4.44	1640.87	4.40
K	629.04	1.68	648.95	1.74
Plant protection	392.24	1.05	379.75	1.02
Land revenue	96.8	0.26	92.79	0.25
Incidental charge	129.25	0.34	150	0.40
Interest on working capital @ 13%	1409.38	3.78	1383.33	3.71
Depreciation on capital assets @ 10%	383.16	1.03	367.92	0.98
Cost-A (Σ 1 to 11)	23572.19	63.31	23186.06	62.28
Rental value of land	10366.74	27.84	9410.86	25.27
Interest on fixed capital @ 11%	421.47	1.13	404.72	1.08
Cost-B (Σ 12 to 14)	34360.4	92.29	33001.64	88.64
Family human labour	3882.35	10.43	4227.67	11.35
Cost-C (Σ 15 to 16)	38342.75	100	37229.31	100

Table 4: Profitability in MAUS-71 and JS-335 soybean production

Particulars	MAUS-71	JS-335
	Amount	Amount
Return from a main produce	62793.44	57042.3
Return from by produce	220.4	145.71
Gross return (Σ 1 to 2)	63013.84	57188.01
Cost-A	23572.19	23186.06
Cost-B	34360.4	33001.64
Cost-C	38342.75	37229.31
Farm business income (Gross return minus cost-A)	39441.65	34001.95
Family labour income (Gross return minus cost-B)	28653.44	24186.37
Net Profit (Gross return minus cost-C)	24671.09	19958.7
Output-input ratio (Gross return divided by cost-C)	1.64	1.54
Per quintal cost of production (cost C divided by main produce quantity)	2191.01	2329.74

Table 5 : Resource productivity and resource use efficiency in production of soybean MAUS-71

Variables	Bi	S.E.	t-value	G.M	M.P	MVP	Price of output	MVP to price ratio
Area	8.520	3.408	2.499**	1.283	0.479	1718.41	96.80	17.75
Hired h. labour	2.166	1.666	1.299	31.255	2.971	10658.46	195	54.658
Bullock labour	-1.942	1.491	-1.302	11.715	-0.998	-3580.32	350	-10.229
Machine	-9.402	1.568	-4.813**	7.247	-2.991	-33729.67	450	-74.954
Seed	1.295	4.709	2.751	93.548	5.318	18432.57	76.66	240.44
Manure	-3.640	9.409	-3.869**	14.570	-2.328	-8351.7	100	-83.51
N	4.730	1.560	3.031	15.799	3.280	11767	11.86	992.15
P	7.703	1.112	6.921**	21.317	7.208	25858.7	46.25	559.10
K	-1.838	5.102	-3.601	1.407	-0.113	-405.38	28.33	-14.30
Plant protection	-1.139	6.140	-1.855	1.148	-0.057	-204.48	350	-0.584
Family labour	3.756	8.497	4.420**	18.609	3.068	11006.45	195	56.44

* and ** indicate significance of value at P=0.05 and 0.01, respectively

R² = 0.819

F value = 5.379

Return to scale = 0.86

n = 60

Table 6 : Resource productivity and resource use efficiency in production of soybean JS-335

Variables	Bi	S.E.	t-value	G.M	M.P	MVP	Price of output	MVP to price ratio
Area	1.046	3.141	3.330**	1.276	0.063	224.80	92.79	2.422
Hired h. labour	2.255	1.385	1.628*	34.065	3.660	13060.05	195	66.974
Bullock labour	-1.593	8.768	-1.817	10.360	-0.786	-2804.69	350	-8.013
Machine	1.233	1.101	1.119*	6.880	0.404	1441.60	450	3.203
Seed	3.766	8.399	3.935**	92.578	16.615	59287.63	60	988.127
Manure	-1.574	8.399	-1.875	15.209	-1.140	-4067.88	100	-40.678
N	-2.686	6.861	-3.915**	24.682	-3.159	-11272.32	11.86	-950.44
P	-2.376	9.825	-2.418**	20.772	-2.352	-8392.68	46.25	-181.463
K	-3.303	9.623	-3.432**	3.595	-0.565	-2016.10	28.33	-71.164
Plant protection	3.094	5.935	5.213**	1.274	0.187	667.27	350	1.906
Family labour	3.646	5.55	6.569**	17.075	2.966	10583.63	195	54.275

* and ** indicate significance of values at P=0.05 and 0.01, respectively

R² = 0.798

F value = 6.915

Return to scale = 1.27

n = 60

positively significant level at 5 per cent level of probability. The variables like hired human labour and machine were positively significant at 5 per cent level. With respect to optimum utilization of input it is observed that none of the resources was use at their optimum level. The R² value was 0.79 which indicated that 79 per cent variation and 0.819 which indicated that 82 per cent variation in MAUS-71 and JS-335 soybean production was explained, respectively by the selected variables.

Conclusion :

Majority of respondents in MAUS-71 were in above 45 years age group (63.33 %) and in case of JS-335 soybean growers were in 30-45 age group (58.33 %) and 68.75 per cent respondents were attended high school. The average area under MAUS-71 was more than JS-335 soybean *i.e.* 1.48 ha of MAUS-71 soybean and under JS-335 soybean area was 1.40 ha. The gross cropped area was 4.70 ha of MAUS-71 and 4.18 ha of JS-335 of soybean and cropping intensity was 152.1 per cent of MAUS-71 which was higher than JS-335 *i.e.* 135.71 per cent. Per hectare cost of cultivation of MAUS-71 was Rs. 38342.75 and that of JS-335 was

Rs. 37229.31. It indicated that cost of cultivation of MAUS-71 was higher by Rs. 1113.44 than JS-335. The output-input ratio of MAUS-71 and JS-335 of soybean was 1.64 and 1.54, respectively which indicates that MAUS-71 of soybean crop is highly profitable enterprise than JS-335 soybean variety.

Authors' affiliations :

S.H. KAMBLE, Department of Agricultural Economics, College of Agriculture, LATUR (M.S.) INDIA

BANDI SRIKANTH, Department of Agricultural Economics, Vasant Rao Naik Marathwada Krishi Vidyapeeth, PARBHANI (M.S.) INDIA

REFERENCES

- Acharya, S.S.** and Agrarwal, N.L. (2005). *Agricultural Marketing in India*, pp. 48,391,400, Oxford & IBH publishing co. pvt. ltd., New Delhi.
- Pawar, N.D.,** Patil, H.N. and Bhosale, T.G. (1999). Marketing of Soybean in Maharashtra State. *Agric. Mktg.*, **42**: (3) 29-33.
- Wankhade, R.N.,** Dhanwate, S.P., Bhende, A.M. and Malthane, G.B. (2010). Marketing of Soybean in Amravati district of Maharashtra. *Internat. J. Appl. Agric. Res.*, **5**(2) : 215-220.

12th
Year
★★★★★ of Excellence ★★★★★