

**PROFITABILITY IN PRODUCTION OF SOYBEAN IN MADHYA PRADESH****Dr. ANAND KUMAR SHRIVASTAVA**

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**Abstract**

This research paper is an attempt to identify the profitability of Indian Farmers. Paper analyses the issue while keeping some of constrain regarding availability of data on farming culture. Although we have tried to draw a significant conclusion on the basis of input cost, cost of cultivation minimum support price for Soybean in Madhya Pradesh.

We have found the extensive fluctuation in price of soybean affecting the profitability of farmer over a period of time. Along with this, it is also found that change in the price of input cut shot the amount of profit.

**Key Words:** Profitability, Soybean, Cost and Profit

**Introduction**

Agricultural is the oldest and most avocation of the world. At certain stages of development it was used to be the only means of life but, now it became the largest private & unorganized industry where the choice of growing a particular crop to a particular area is decided on the possibility of earning the maximum profit. The farmer raises the crop with the objective of getting more income. Farmer's producing crop with business motive will work more efficiently and diligently with the objective of getting more profit from less investment. In other words, in agricultural the land is workshop from where greater returns are expected.

Today, among commercial crops, soybean has been cultivated by the farmers to get higher returns because it has shown an impressive potential for increased productivity, profitability and sustainability of agricultural lending for improving the economics status of farmer. Along with this expectation of farmer's, it is popular as rich food full of proteins and its oil is the best vegetable oil available in the market. It has emerged as an important crop with tremendous yield potential among oil seed and has also become the useful source of foreign currency. In the recent years significant changes have

occurred in Soybean production and utilisation due to increasing commercial orientation of this crop and rising Soybean demand for diversified and uses.

Soybean scientifically known as 'Glucine Max' is a pleasant weather crop and is grown under divergent climate condition in different part of India from tropical to temperature regions. Madhya Pradesh is called the 'Soy Capital' of India and produce near about 85 per cent of the total production of the country. The other soybean producing states are Maharashtra, Rajasthan, and Uttar Pradesh but no one is producing more then 5 per cent of the total production of the country. In other states the Soybean production is nil.

Therefore, growth analysis in production and economic factors based on secondary data were taken as the prime objective of the study.

**Objective**

The specific objectives of study are:

1. To analysis the cost of cultivation of soybean crop and percentage share of inputs.
2. To observe the trend in profitability of soybean cultivation.

**Research Methods**

Collection of recent data related to agriculture is a critical issue. Therefore, we analyses available data to draw a significant conclusion. The secondary data of area, yield, production, minimum support process of soybean at India

level has been collected from the various issues of Agricultural Statistics at a Glance published by Directorate of Economics and Statistics, Department of Agriculture. Data of Madhya Pradesh related to area yield and production of soybean was collected from various issues of Agricultural Statistics of Madhya Pradesh. Cost of cultivation of soybean crop in Madhya Pradesh has been collected from the website of <http://www.madhyapradeshstat.com>.

Profitability of soybean crop was assessed using the difference between the cost of cultivation and the minimum support price declared by the government for the yellow soybean over the time.

In mathematical form;

Profit = Minimum Support Price (Rs/q) — Cost of Production (Rs/q)

The growth rate is estimated by using log linear functions on the time series data on production, area and yield in respect to the soybean crop.

The equation fitted to analyze the trend growth rate is semi log exponential form;

$\log Y = A + bt$  Where, Y = Production/ area/ yield t = Year (time) The coefficient b is further process for the calculation of the growth rate.

Growth rate =  $\{ \text{Antilog}(b) - 1 \} \times 100$

**Extent of Soybean In Madhya Pradesh**

In the recent years significant changes have occurred in soybean production and utilisation due to increasing commercial orientation of this crop and raising soybean demand for diversified end uses. According to 'Soybean Processor's Association of India' the major share of the soybean produces is used for crushing. (See table-1)

Besides this the area under Soybean cultivation has increased marginally from 2.65 Mha to 4.17 Mha, recording a compound growth rate of 8.75 per cent per annum during 1991-92 to 2003-04 in Madhya Pradesh. Whereas the overall growth of area under cultivation in soybean at India level has increased from 3.18 Mha to 6.5 Mha with a compound growth rate of 13.13 per cent annum during the same period.

**Table: 1 Soybean Production and Utilisation**

Year	Soybean crushed	Extraction Produced	Oil Produced	Production
1991-92	1.733	1.447	0.298	2.549
1992-93	2.755	2.231	0.482	3.36
1993-94	3.199	2.592	0.56	3.9
1994-95	2.578	2.088	0.451	3.216
1995-96	3.505	2.839	0.613	4.476
1996-97	3.182	2.577	0.557	4.028
1997-98	4.156	3.367	0.727	5.347
1998-99	4.274	3.462	0.748	5.9
1999-00	4.447	3.647	0.8	5.05
2000-01	4.327	3.548	0.779	5.01
2001-02	4.867	3.991	0.876	5.4
2002-03	3.6	2.952	0.648	4.3
2003-04	6.091	4.994	1.096	6.932

Source: The web site of Soybean Processor's Association of India <http://www.sopa.org/statindex.htm>

The growth of area under soybean crop is higher at India level rather than in Madhya Pradesh. It is clear from this that the expansion of soybean crop in Madhya Pradesh increased slowly. Yet, Madhya Pradesh is the largest producer of the soybean in India. This arise a question that why this thing has happened? To address this

question, if we go through the data of yield of soybean in India as well as in Madhya Pradesh it is clear that both have a wide variation over the time. The yield in soybean was recorded 782 kg/ha in 1991-92 and that increased to 1208 kg/ha in 2003-04 at India level recording an over all growth rate of 1.74 per cent per annum.

But, in Madhya Pradesh yield in soybean was recorded 790 kg/ha in 1991-92 and that increased to 1132 kg/ha in 2003-04 recording an over all growth rate of -0.59 per cent per annum. Obviously, the declining trend in the growth rate of Yield in Madhya Pradesh is not the direct and alone reason of the slower growth rate of area under soybean cultivation. But it

may be the major reason for that. As results of increases in area under cultivation, and increased yield, production of soybean crop increased from 2.49 MT to 7.85 MT during 1991-92 to 2003-04. Almost a similar picture is seen in the case of production if we compare the growth rate of production of Soybean crop in India and Madhya Pradesh.

**Table-2 Performance of Growth**

Year	India			Madhya Pradesh			% Share of MP in Production
	A	Y	P	A	Y	P	
	Mha	Kg	MT	Mha	Kg	MT	
1991-92	3.18	782	2.49	2.65	790	2.09	83.94
1992-93	3.79	894	3.39	3.05	851	2.6	76.70
1993-94	4.37	1086	4.75	3.42	1054	3.6	75.79
1994-95	4.32	911	3.93	3.23	890	2.87	73.03
1995-96	5.04	1012	5.1	3.85	1011	3.89	76.27
1996-97	5.45	987	5.38	3.95	952	3.76	69.89
1997-98	5.99	1079	6.46	4.47	1084	4.85	75.08
1998-99	6.49	1100	7.14	4.42	1012	4.47	62.61
1999-00	6.22	1138	7.08	4.44	1068	4.74	66.95
2000-01	6.42	822	5.28	4.48	767	3.43	64.96
2001-02	6.34	940	5.96	4.45	840	3.74	62.75
2002-03	5.87	777	4.56	4.1	638	2.67	58.55
2003-04	6.5	1208	7.85	4.17	1132	4.71	60.00
<b>Compound Growth Rate</b>	<b>13.13</b>	<b>1.74</b>	<b>15.08</b>	<b>8.75</b>	<b>-0.59</b>	<b>8.24</b>	-

**Source: Various issues of Agricultural Statistics At a Glance and Agricultural Statistics Madhya Pradesh.**

**Trend In Cost Of Cultivation Of Soybean**

The cost of cultivation scheme was initiated by government of India since 1970-71 to facilitate in fixing minimum support price (MSP). But

after some time MSP became finalized by some other factors like political pressure, stock of a particular crop etc.

**Table-3 Cost of Cultivation of Soybean in Madhya Pradesh**

Year	Cost of Cultivation per Hect.(Rs.)			Cost of Production per Qtl.(Rs.)		
	A1	B1	CI	A1	B1	CI
1990-91	2479	2814.52	3069.05	223.93	252.38	276.46
1991-92	2999.16	3384.62	3698.89	316.75	358.46	392.15
1992-93	3636.63	4307.84	4960.13	331.65	366.85	411.83
1993-94	3547.71	4305.04	4906.59	301.72	366.13	417.29
1994-95	3651.21	3975.9	4639.77	354.08	385.57	449.95
1995-96	4589.28	4917.06	5924.98	372.53	401.23	485.18
1996-97	4831.2	5322.82	6578.6	428.18	472.31	583.99
CGR	26.48	23.62	29.71	21.16	19.39	25.46

Notes Cost A 1 : All actual expenses in cash and kind incurred in production by owner. Cost B 1: Cost A1 +interest on value of owned capital assets (excluding land). Cost C I: Cost B I +imputed value of family labour.

Source : Reports of the Commission for Agricultural Costs and Prices for the Crops Sown During 2003-04 Season, Dept. of Agriculture & Cooperation, Ministry of Agriculture, Govt. of India. & [www.indiastat.com](http://www.indiastat.com)

Commission for Agricultural Costs and Prices (CACP) relies on the cost concepts which cover all items of expenses of cultivation including in that the imputed value of inputs owned by farmers such as rental value of owned land and interest on fixed capital. But here we use only A1, B1, and C1 cost for the analysis. However, CACP recommends that MSP should be considered on the basis of C2 cost, which includes all actual expenses in cash and kind incurred in production by actual owner plus rent paid for leased land plus imputed value of family labour plus interest on value of owned capital assets (excluding land) plus rental value of owned land (net of land revenue) Just to identify the how much a farmer expense in cash with the help of A1 cost and further for how much he get in cash.

Table3 shows the cost of cultivation of soybean crop in Madhya Pradesh for the 1991-97 periods. A1 Cost of soybean cultivation has increased from 2479 Rs per hectare to 4831.2 Rs per hectare during 1991-92 to 1996-97 recording an overall growth rate of 26.48 per cent per annual. However, the growth rate for the same period of A1 cost at per quintal has increased from 223.93 Rs per quintal to 428.18 Rs per quintal during 1991-92 to 1996-97 recording an overall growth rate of 21.16 per cent per annual. It is clear from the above that the A1 cost of soybean cultivation per quintal in increased slowly as compare to the A1 cost of soybean cultivation per hectare. As far as BI

and C1 cost per hectare is concerned both are increased over the time by the growth rate of 23.62 and 29.71 per cent annually. Increased in the B1 cost is mainly due to the change in interest rate over the time. But the changes in the cost C 1 might be due to the increased dependency on land particularly in the rural area. In other words this can also express as the disguise employment in the field of agriculture. Defiantly, It is different thing that they work for cultivation or not, but they are reliant for their survival on agricultural.

Further, if we decompose the cost of soybean cultivation per hectare for the different inputs, (see table 4) we can see that more than 90 per cent of actual expenses in cash and kind incurred in production is due to expenditure on seed, fertilizer, manure, human labour (excluding family labour) and Animal labour. Among these the major share of expenditure ranging from 30 to 42 per cent is due to human labour followed by the expenditure on seeds ranging from 24 to 28 per cent of the A1 cost. Besides these, the expenditure on fertiliser for the cultivation has the increasing trend over the time but its share in the cost of cultivation is only 8 to 15 per cent during the period. This is might be due to the low consumption of fertiliser in Madhya Pradesh. Decreasing trend of expense on manure clearly indicates that the use of manure for the cultivation of soybean is decreased over the time.

**Table-4 Cost of Input Used (per hectare)**

Year	Seed(Kg.)	Fertilizers (Kg. Nutrients)	Manure (Qtl.)	Human Labour (Man Hrs.)	Animal Labour (Pair Hrs.)	total Input cost	Cost of Cultivation per Hect.(Rs.) (A1)
1990-91	615.82	322.48	122.18	808.63	341.80	2210.91	2479
	(24.84)	(13.01)	(4.93)	(32.62)	(13.79)	(89.19)	(100.00)
1991-92	763.62	298.50	271.82	908.52	383.74	2626.19	2999.16
	(25.46)	(9.95)	(9.06)	(30.29)	(12.79)	(87.56)	(100.00)
1992-93	905.11	303.39	182.44	1396.79	739.62	3527.34	3636.63
	(24.89)	(8.34)	(5.02)	(38.41)	(20.34)	(96.99)	(100.00)
1993-94	934.75	446.04	32.57	1298.77	493.92	3206.05	3547.71
	(26.35)	(12.57)	(0.92)	(36.61)	(13.92)	(90.37)	(100.00)
1994-95	1017.01	521.09	67.39	1310.85	525.19	3441.53	3651.21
	(27.85)	(14.27)	(1.85)	(35.90)	(14.38)	(94.26)	(100.00)

1995-96	1120.06	721.86	168.97	1904.72	671.15	4586.76	4589.28
	(24.41)	(15.73)	(3.68)	(41.50)	(14.62)	(99.95)	(100.00)

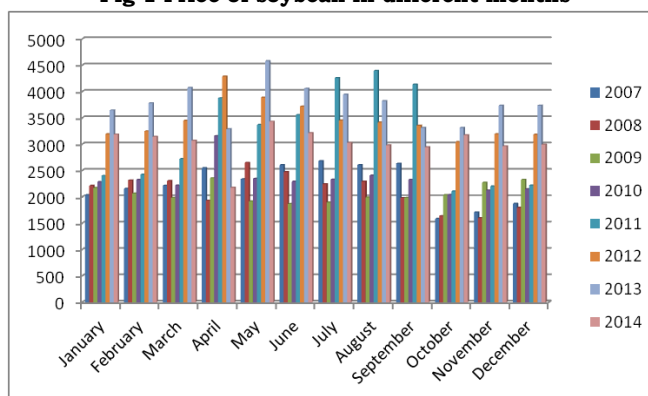
Source: Calculated on the basis of data given on indiastat.com

### Minimum Support Price and Profit Of Soybean

Cost of cultivation has seen an unprecedented rise this Kharif season as compared to the previous one. Prices of inputs have flared due to factors ranging from a shift in government subsidy policy to the rising dollar. In the normal course costs rise by 10-15%, this is absorbed by increasing market rates for the produce. The cost of cultivation of soybean is high in the

starting of the year but the cultivation price start going down in the end of the year. From the data given in the table the cultivation price has been increase about 55% from 2007-2014.the rise in price due to the increase in inflation and rise in prices of equipments, crops, fertilizers, pesticides and other things require in the cultivation. The failure of monsoon is also one of the major reasons for increase in cost of cultivation.

Fig-1 Price of soybean in different months



It has been observed in table 5 that price of soybean has a high fluctuation over a period of time as well as in different month from 2007 to 2014.

Table- 5 Price of soyabeen From 2007-2014 (in acre)

Month	2007	2008	2009	2010	2011	2012	2013	2014	Std	mean
January	2039	2214	2173	2287	2403	3195	3647	3188	605.20	2643.25
February	2156	2315	2067	2325	2426	3250	3781	3145	624.20	2683.13
March	2215	2306	1986	2220	2722	3449	4074	3072	726.42	2755.50
April	2549	1932	2358	3158	3878	4290	3288	2178	841.58	2953.86
May	2338	2651	1916	2346	3372	3890	4584	3432	906.64	3066.13
June	2607	2476	1868	2295	3557	3718	4058	3214	773.96	2974.13
July	2681	2245	1896	2332	4262	3453	3948	3030	847.80	2980.88
August	2607	2294	1993	2409	4396	3417	3823	2982	829.44	2990.13
September	2633	1982	1983	2329	4138	3357	3314	2946	752.37	2835.25
October	1586	1638	2038	2040	2108	3046	3315	3175	700.64	2368.25
November	1707	1599	2272	2126	2204	3194	3735	2965	750.08	2475.25
December	1872	1799	2329	2148	2221	3186	3736	2997	691.97	2536

Std	383.49	329.91	169.95	280.56	885.14	354.72	373.81	301.04		
mean	2249.167	2120.917	2073.25	2334.583	3140.583	3453.75	3775.25	3027		

### Conclusion

The improvement in agricultural production performance in 2003-04 could largely be attributed to favourable weather conditions. However, in the case of oilseeds, favorable price regime, both market and minimum support prices (MSP) would have also played a positive role. Cost of production has been one of the main considerations in determining the levels of minimum support prices of various crops. The Commission often faces criticism for not being realistic in calculation of cost of cultivation for different crops.

The problem exists largely because of two reasons. First, the costs of cultivation vary widely from region to region, while the CACP recommends MSP for the country as a whole, based on All India weighted average cost. The issue that minimum support prices, as recommended by the Commission, do not cover the costs of production of crops in several regions, cannot be resolved, unless differential MSPs are fixed for different regions. During the past few years, Indian farmers have faced several hardships. Second, due to rising input prices and falling output prices, coupled with frequent crop failure because of unfavorable weather, profit of farmers have shown a declining trend. Farmers would change their cropping patterns only when they expect an economic gain from such a change. We can aspect a control over the price of input by the government not only on fertilizer but also on the seeds, insecticides and pesticides too especially in sowing season.

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