IMPACT: International Journal of Research in Applied, Natural and Social Sciences (IMPACT: IJRANSS)
ISSN(P): 2347-4580; ISSN(E): 2321-8851
Vol. 4, Issue 8, Aug 2016, 119-124
© Impact Journals

INFLUENCE OF VARIABLES ON YIELD OF SOYBEAN IN RAISEN DISTRICT OF MADHYA PRADESH

NAVAL RAGHUWANSHI[1], R. S. RAGHUWANSHI[2] & SHEELA RAGHUWANSHI[3]

[1]Student M.Sc (Agril Econ) Madhya Pradesh India

[2]Associate Professor, Department of Agril Econ Madhya Pradesh India

[3]Assistant Professor, Department of Extension Education, COA, Tikamgarh, Madhya Pradesh India

ABSTRACT

An attempt has been made to identify the variables those having significant correlation with soybean yield. The values of partial regression coefficients (b-values) were worked out and it is observed that soybean yield was negatively and significantly influenced by irrigated oilseed area in Bareli tehsil in Raisen district of Madhya Pradesh. The multiple R^2 (Coefficient of determination) value had been found 49.99 per cent at district level to imply all variables put together only 49.99 per cent of total had been rendered explicable. The multiple R^2 value at district level indication that some other variables like rainfall during crop season, fertilizer consumption etc also had substantial effect on the yield of soybean. Studies further indicate that 0.174 to 7.79 per cent variation in yield contributed by all three variables included in the study in regards to tehsils. Thus, on the basis of above finding it can be concluded that none of the studied variables emerged undisputedly as the most important factor in determine yield variation because none of these had influence on soybean yield at district level.

KEYWORDS: Influence, Madhya Pradesh, Soybean, Variables and Yield

INTRODUCTION

India being an agriculture country agriculture sector at present provides livelihood to 65 per cent of the total population. This section provides employment to 58.2 per cent of country's work force and is the single largest private sector occupation (Tyagi, V. 2012). The Agriculture sector which alone represents 23 per cent of India's Gross National Product (GNP), plays a crucial role in the country's development and shall continue to occupy an important place in the national economy. Indian agriculture has witnessed wide variations in growth performance during a span of six decades after independence. The variability was particularly pronounced due to the subsistence nature of farming in India and the sector's heavy dependence on monsoon and other climatic parameters. In the initial years after the inception of planned development, it was the green revolution technologies that fired up growth in the sector for nearly three decades.

Soybean has emerged as golden bean of 21st century and it is largely used as oilseed. It is the single largest oilseed grown in the different agro-climatic conditions. Soybean is looked upon not merely as a means to supply food for humans and animals, but it also improves the soil fertility by fixing atmospheric nitrogen (Jaiswal and Hugar 2011). Soybean is known as "poor man's meat" which is rich in unsaturated fatty acids with anti-cholesterol properties.

India is the fifth largest producer of soybeans in the world, which is grown in area of 9,673 thousand hectares with the production of 9,720 thousand tonnes (SOPA, 2010). Soybean contributes significantly to the Indian edible oil pool.

Presently soybean contributes 43 per cent to the total oilseeds and 25 per cent to the total oil production in the country. The crop helps earn valuable foreign exchange by way of soya meal exports. The major soybean producing nations are the United States, Brazil, Argentina, China and India. India occupying fifth position in Global production of Soybean with 3.95 per cent share. The state of Madhya Pradesh has distinguished itself as a `Soya State' on account of its largest share in area (77%) and production (72%) of soybean in India (GoMP). In Raisen District of Madhya Pradesh, Agricultural is the main occupation of the district. About 70% of the working population is engaged in crop growing activities, the major crops cultivated are paddy, soybean, wheat, and gram. In the backdrop, the present study has been under taken to evaluate the trend in area, production and productivity of major crops of different tehsils of Raisen.

METHODOLOGY

The study was confined to Raisen district of Madhya Pradesh in the year 2013-14. The district comprises of seven tehsils *viz.* tehsils – Raisen, Gouharganj, Begamganj, Gairatganj, Silwani, Udaipura and Bareli. The study covered all tehsils of the district. The time series secondary data on the area, production and productivity of soybean were collected from District Agriculture Office and different published and unpublished records of District Statistical Office of Raisen District. The Present study covers a period from the year 2002-03 to 2011-12. The collected data were complied, processed and analyzed through various analytical tool viz. Arithmetic mean, measure of variability, growth and trend analysis, compound growth rate to estimate the results of stated objective.

RESULTS & DISCUSSIONS

The data on mean value and associated variability is given in table 1. The highest acreage of soybean crop is noted for Goharaganj tehsil (37.14 thousand ha) followed by Silwani (33.47thousand ha.), Raisen (27.42 thousand ha.), Begamganj (23.42 thousand ha.) and Bareli (22.24 thousand ha.) tehsil of the district. These five tehsils account for about.80 percent of the total area of soybean in the district. The low variability in acreage of soybean was noted for Raisen (3.78%), Goherganj (7.46%), Silwani (7.51%) and Garatganj (8.76%) tehsil while it was moderately high for Udaipura (15.54 %) tehsils of the district.

Table 1: Variability in Area, Production and Productivity of Soybean in different Tehsils of Raisen District (ha.)

Tehsils	Area		Production		Productivity	
	Mean	CV%	Mean	CV%	Mean	CV%
Raisen	27411.90	3.78	259732.18	14.78	9.50	15.95
Gairatganj	15713.30	8.76	148148.40	12.23	9.46	11.79
Begumganj	23418.70	10.93	238313.12	16.48	10.34	22.02
Silwani	33462.00	7.51	328939.52	20.54	9.92	22.69
Goharaganj	37137.60	7.46	355118.56	15.38	9.68	20.89
Udaipura	19807.50	15.54	182850.52	22.00	9.22	13.27
Bareli	22241.90	15.15	332943.62	42.66	14.54	31.90
Raisen District (Total)	**179192.90**	**7.05**	**1846045.92**	**12.57**	**10.38**	**13.22**

The data on average production of soybean in different tehsils of the district shows that it was highest in Goharganj tehsil (35.52 thousand tonnes) followed by Bareli tehsil (33.30 thousand tonnes), Silwani (32.90 thousand tonnes), Raisen (25.98 thousand tonnes) and Begamganj (23.84 thousand tonnes) these five tehsils account for more than

82% of the total production of soybean in the district. Production variability in all the tehsils of the district was higher as compared to acreage and productivity variability. The production variability is a product of acreage and productivity variability in production ranged between 12.23 per cent for Goharganj tehsil to 42.66% for Bareli tehsil of Raisen district.

The mean productivity data of soybean presented in table 4.1 revealed that it ranged between 9.22 to 14.54 q ha-1 with the variability in the range of 11.79% to 31.90% and it is also observed that in general the tehsils with lower acreage variability have higher productivity variability and vice-versa which ultimately resulted in higher production variability of soybean in different tehsils.

Table 2: Growth in Area of Soybean in Raisen District Form the Period of 2002-03 to 2011-12

Tehsils	'b Value'	't Value'	Linear Growth Rate (%)	Compound Growth Rate (%)
Raisen	300.67	5.18**	1.10	1.10
Gairatganj	390.15	4.74**	2.48	2.57
Begumganj	830.73	1497**	3.55	3.59
Silwani	00.62	10.26**	2.39	2.40
Goharganj	903.24	17.83**	2.43	2.46
Udaipura	-90.83	-0.25	-0.46	-0.33
Bareli	901.65	3.91**	4.05	4.27
Raisen District (Total)	**4036.24**	**10.72**	**2.25**	**2.28**

****-significant at p=0.01**

It is observed from the Table. 2 that there is a negative growth in area of soybean in the Udaipura tehsil out of 6 tehsils viz. Goharganj, Bareli Begamganj Silwani Goherganj and Raisen significant growth in area. The trend analysis indicates that the tehsil Bareli showed highest linear growth rate of 4.05% followed by Begamganj (3.55%) Gairatganj (2.48%) Goharganj(2.43%) and Silwani (2.39%) against the overall linear growth rate (2.25%) in area of soybean. The compound growth rate of soybean area was also positive in six tehsils of Raisen district and it was highest in Bareli (4.27%) followed by Begumganj (3.59%), Gairatganj (2.57%) Goharganj (2.46%) where it was negative in only. Udaipura (-0.33%) at 1 percent level of significant. All the tehsil taken together i.e. Raisen district had registered compound growth rate of (2.28%) for soybean area at 1 per cent level of significance.

Table 3: Growth in Production of Soybean in Different Tehsils of Raisen for the Period of 2002-03 to 2011-12

Tehsils	'b value'	't value'	Linear Growth Rate (%)	Compound Growth Rate (%)
Raisen	-6519.87	-1.70	-2.51	-2.61
Gairatganj	871.66	0.42	0.59	0.58
Begumganj	-5023.06	-1.19	-2.11	-2.27
Silwani	-7217.19	-0.97	-2.19	-2.58
Goharganj	-122275.47	-2.63*	-3.46	-3.54
Udaipura	-8110.70	-2.18	-4.44	-4.34
Bareli	31465.34	2.56*	9.45	10.97
Raisen District (Total)	**-6809.29**	**-0.25**	**-0.37**	**-0.51**

*-significant at p=0.05

Table 3 revealed that the tehsils viz. Goharganj, Udaipura, Silwani exhibited higher linear growth rate in negative direction as compared to other tehsil and showing -4.44 per cent, -3.46 per cent, -2.51 per cent growth rate, respectively against the overall linear growth rate of -0.37 per cent in production of soybean in Raisen district. Compound growth rate of soybean production in most of the tehsil as well as district was also negative and was higher in Bareli tehsil (10.97%) followed by Udaipura tehsil (-4.34%), Raisen (- 2.61%) & Silwani tehsil (-2.58%) then overall compound growth rate of (-0.51%) in soybean production of Raisen district.

Table 4: Growth in Productivity of Soybean in Raisen District from the Period of 2002 -03 to 2011-12

Tehsils	'b value'	't value'	Linear Growth Rate (%)	Compound Growth Rate (%)
Raisen	-0.33	-2.52*	-3.51	-3.67
Gairatganj	-0.1	-1.53	-1.86	-1.94
Begumganj	-0.58	-3.37**	-5.57	-5.66
Silwani	-0.43	-1.98	-4.30	-4.87
Goharganj	-0.56	-4.29**	-5.76	-5.86
Udaipura	-0.36	-5.73**	-3.93	-4.02
Bareli	0.7	1.96	5.99	6.42
Raisen District (Total)	**-0.22**	**-1.60**	**-2.15**	**-2.33**

*-significant at p=0.05
**-significant at p=0.01

As observed from the table.4 that the trend value (b) in all the tehsil of Raisen district and also in Raisen as a whole is negative and significant. The overall average productivity of soybean has decreased by -22 kgha-1 per year the linear as well as compound growth rate of soybean productivity was highest in Bareli tehsil (5.99 and 6.42%) out of 7 tehsils. Remaining 6 tehsils recorded negative growth (linear as well as compound) rate (-) highest in goharaganj (-5.76 and -5.86%) followed by Begamganj (-5.57 and – 5.66%), Silwani (-4.30and -4.87%), Udaipura(– 3.93 and -4.02%), Raisen (-3.51 and -3.67%) and Gairatganj (-1.86 and -1.94%) all the tehsils taken together had registered (-2.15 and -2.33%) linear and compound growth rates negative in productivity of soybean, respectively.

CONCLUSIONS

It can be conclude from the above discussion that the growth rates of production and productivity of soybean are negative in most of the tehsils but positive and highly significant in case of area for all the tehsils as well as district. It is clearly indicates that soybean crop is vanishing from the cropping pattern due to irregular rains and introduction of hybrid rice. Thus, it is concluded from the above findings that the area of soybean showed positive linear as well as compound growth rate in most of the tehsil along with district and it is highest in Bareli.

REFERENCES

1. Jaiswal, A., and Hugar, L. B., 2013. An economic analysis of soybean cultivation vis-a-vis its competing crops in Madhya Pradesh, *Karnataka Journal of Agricultural Sciences*, 24(4): 591-592, 2011.
2. Vandana tyagi 2012. IndIa's agrIculture: Challenges for Growth & development in present scenario. *IJPSS. Volume 2, Issue 5 (May 2012):116-127.*
3. *Sopa. 2010. Area and production estimates of soybean in India Kharif (monsoon) 2010. (Based on crop survey conducted by SOPA–September 15 to 27, 2010)*
4. *www.mpkrishi.org*