

## ADOPTION OF IMPROVED SOYBEAN CULTIVATION TECHNOLOGY BY FARMERS OF CHITTORGARH DISTRICT

B.S. Bhimawat<sup>1</sup> & Ms. Aabha Gupta<sup>2</sup>

### ABSTRACT

*In Rajasthan, soybean is cultivated on 659.2 thousand hectare with average production of 455.9 thousand tonnes. However, the productivity is deplorably low, 692 kg/ha. compared to genetic potential of 30-35 q/ha (fertilizer statistics, 2001-2002). Therefore, it was felt to work out location specific production technologies to contribute more towards oilseeds pool. The present investigation focuses its attention on a study to measure the adoption level of farmers about recommended soybean cultivation technology. The total sample constitute of 126 respondents. The study revealed that majority of respondents fell under category of medium level of adoption about improved practices of soybean cultivation. The study also revealed that highest adoption level was found in practices like recommended spacing, seed rate, harvesting, threshing and storage. There was a significant variation among all the three categories viz. large, small and marginal of respondents with regard to adoption of improved soybean cultivation practices.*

**Key word :** Adoption, Improved Soybean Cultivation Technology.

### INTRODUCTION

Soybean has attained a prominent position in India's agro-economy. The phenomenal increase in its area and production together with the expansion in processing units has earned a prominent position for India on the world map of soybean industry. In fact, it is probed to be a fortune crop in terms of edible oil production, export earnings and rural prosperity. Ninety one per cent of soybean production in the world is contributed by USA, Brazil, China, Argentina and India. In Rajasthan, soybean is cultivated on 659.2 thousand hectare with average production of 455.9 thousand tonnes. However, the productivity is deplorably low, 692 kg/ha. compared to genetic potential of 30-35 q/ha (fertilizer statistics, 2001-2002). Therefore, it was felt to work out location specific production technologies to contribute more towards oilseeds pool. In general, there is very limited scope for expansion of area exclusively under oilseeds, hence only alternative to boost production seems to bridge the gap between potential and average yield realized by farmers through developing appropriate production technologies and to make these technologies available to the farmers suited to each micro farming situation of soybean growing areas. In Rajasthan soybean is cultivated in Jhalawar, Kota, Baran, Chittorgarh and Bundi districts. There are about 63 varieties of soybean seeds available in the country. But the popular varieties under cultivation in Rajasthan are PK-472, JS-335, JS-8021, Smarat, Max-58 and JS-7105. But the productivity is much lower

than the genetic potential of the crop. In view of the above, a study was undertaken to measure the adoption level of farmers about recommended soybean cultivation technology.

### METHODOLOGY

The present study was conducted in Chittorgarh district for seeing the transfer of improved soybean production technology. Two panchayat samities were selected on the basis of maximum area under soybean cultivation and three villages from each selected panchayat samiti were selected on the same basis. Thus, total six villages i.e. three villages from each selected panchayat samiti were included in the study sample. To select the respondents, 21 respondents (i.e. 7 large, 7 small and 7 marginal) were selected randomly from each selected village. Thus, the total sample constituted of 126 respondents. Various appropriate statistical tests were used for analysing the data.

### RESULTS AND DISCUSSION

**1. Distribution of respondents on the basis of adoption level of improved soybean cultivation practices**—To get an overview of the respondents with respect to the level of adoption, they were grouped into three strata viz., (i) low adoption (ii) medium adoption and (iii) high adoption groups on the basis of mean and standard deviation of the adoption scores obtained by the respondents.

**Table 1. Distribution of respondents on the basis of adoption level of improved soybean cultivation practice (N = 126)**

S. No.	Level of adoption	Marginal farmers		Small farmers		Large farmers		Total	
		F	%	F	%	F	%	F	%
1.	Low (< 14.01MPS)	22	52.38	15	35.71	9	21.43	46	36.51
2.	Medium (14.01-23.91 MPS)	20	47.62	19	45.24	19	45.24	58	46.03
3.	High (> 23.91MPS)	0	0.00	8	19.05	14	33.33	22	17.46
	<b>Total</b>	<b>42</b>	<b>100</b>	<b>42</b>	<b>100</b>	<b>42</b>	<b>100</b>	<b>126</b>	<b>100</b>

F = Frequency; % = Percentage

The data in table 1 reveal that 58 (46.03%) of the total respondents were found to be in medium adoption level group whereas, 46 (36.51%) respondents were reported from the group of lower adoption level and only 22 (17.46%) of the total respondents could be placed in the high adoption level group. While analysing the case of big, small and marginal respondents regarding the level of adoption about improved SPT, it was alarming to note that none of the marginal respondent was found with high level of adoption. On the other hand, the frequency of marginal farmers with low level of adoption of SPT was reported to be 52.38 per cent, while, big respondents with high level of adoption of SPT were reported to be satisfactory i.e. 33.33 per cent. A close observation of the data in the table reveals that equal number of respondents i.e. 45.24 per cent in case of small and large farmers and 47.62 per cent marginal farmers was found with the medium level of adoption. The maximum marginal farmers were reported in low adoption level.

Thus, it can be said that majority of respondents fell under category of medium level of adoption about improved practices of soybean cultivation. None of the marginal respondents appeared under high level of adoption. The adoption level of large farmers was considerably higher than small farmers. It might be due to the reason that knowledge level of large farmers was comparatively higher than that of small and marginal farmers that might have been contributed for slightly higher level of adoption. Another reason behind such findings might be that majority of the big farmers were educated and resourceful.

The finding are similar with the findings of Singh (2001) who reported that 45.42 per cent gram growers were in medium adoption group and 36.25 per cent respondents in the lower adoption group while, 18.33 per cent were in the group of higher adoption.

In the accordance with findings it is recommended that all the three categories of farmers specially marginal farmers should be motivated and encouraged to enhance the level of adoption, as they have been observed under medium level of adoption. This could be achieved

through the proper well-planned follow-up action by extension agencies, providing the minikits of inputs, timely availability and creating facilities of subsidies regarding inputs.

**2. Extent of adoption of soybean production technology among the three categories of respondents**—The level of adoption of improved practices of SPT was measured for all the major practices of soybean cultivation. To find out the level of adoption, mean per cent score of each practice was calculated separately.

**Table 2. Extent of adoption of respondents towards improved soybean production practices**

S No.	Improved Practices	Marginal farmers MPS	Small farmers MPS	Large farmers MPS	Total MPS
1.	High yielding varieties.	22.32	28.57	40.48	30.46
2.	Soil treatment.	0.00	0.00	0.00	0.00
3.	Seed rate.	70.65	72.85	72.97	72.16
4.	Recommended spacing.	73.12	72.37	78.57	74.69
5.	Depth of sowing.	64.62	64.86	69.86	64.45
6.	Seed treatment.	10.22	18.27	27.62	18.70
7.	Time of sowing.	62.62	64.12	69.32	65.19
8.	Method of sowing.	60.05	58.57	69.97	62.86
9.	Application of FYM.	3.92	8.25	10.22	7.46
10.	Fertilizers & micro nutrient application.	6.16	8.92	15.77	10.28
11.	Time of fertilizer application.	8.92	10.26	17.22	12.13
12.	Weed management.	51.60	50.95	57.14	53.23
13.	Irrigation management.	10.37	15.26	20.29	15.31
14.	Plant protection measures.				
	1. Control of insects, pests.	12.47	16.42	19.52	16.14
	2. Disease management.	0.00	0.00	0.00	0.00
15.	Harvesting, threshing & storage.	65.61	68.11	73.80	69.17
	<b>Overall</b>	<b>34.86</b>	<b>37.19</b>	<b>42.85</b>	<b>38.15</b>

The data presented in table 2 indicate that maximum adoption level was reported in practice like “recommended spacing” with MPS 74.69. This was followed by the practices like “seed rate”, harvesting/threshing and storage, time of sowing, depth of sowing”, “method of sowing”, “weed management”, “high yielding varieties”, seed treatment, plant protection measures, irrigation management, “time of fertilizer application” with the mean per cent score of 72.16, 69.17, 65.19, 64.45, 62.86, 53.23, 30.46, 18.70, 16.14, 15.31 and 12.13, respectively, while, practices like “fertilizer & micro nutrient application” and application of FYM” were having less adoption level by the respondents regarding improved soybean cultivation with mean per cent score 10.28 and 7.46, respectively.

It was interesting to know that there was no adoption in case of “soil treatment and disease management” among all the categories of the farmers in the study area. It might be due to the reason that the soybean crop does not have any important disease in the area at economic

threshold level (ETL). A close observation of the table shows that the adoption level was higher in large farmers than small and marginal farmers in all the major areas of SPT. The higher adoption level in almost all the areas of soybean production in big farmers may be due to their high socio-economic status, so they were able to avail needed facilities that small and marginal farmers were deprived of.

These findings are similar with the finding of Singh (1999) who had reported that pigeon pea growers had poor knowledge and adoption regarding seed treatment, Rhizobium culture and plant protection, high yielding varieties and fertilizer application whereas they had good knowledge and adoption regarding time of sowing, seed spacing, soil preparation and weed management.

**3. Analysis of variance of adoption of respondents regarding improved soybean cultivation practices**—Analysis of variance was applied to find out the significance of variation among all the three categories of farmers viz. marginal, small and large farmers. The results of ANOVA computed for this purpose are presented in table 3.

**Table 3. Variation in adoption of different categories of respondents about improved practices of soybean cultivation**

S.No.	Source of variation	d.f.	S.S.	M.S.S.	'F' cal
1.	Between the category	2	228.05	114.03	7.46**
2.	Within the category	123	1880.45	15.29	
	<b>Total</b>	<b>125</b>	<b>2108.50</b>		

\*\* = Significant at 5% level of significance and at 2 d.f.

**Adoption score mean table:**

Large	Small	Marginal	Overall
20.78	18.82	17.64	19.08
<b>SEm</b>		<b>C.D.</b>	<b>CV (%)</b>
0.603		1.688	20.49

Source : within soybean grower respondents

The calculated 'F' value (7.46) was higher than the tabulated 'F' value at 5 per cent level of significance and at 2 degrees of freedom. Therefore, the null hypoth-

esis i.e. there was no significant variation among large, small and marginal soybean growing respondents regarding adoption of improved SPT, was rejected. It means there was a significant variation among all the three categories of respondents with regard to adoption of improved soybean cultivation practices. Such results might have appeared due to the reason of high knowledge, active social participation, sound economic status, risk bearing capacity and innovative attitude among the big farmers as compared to small and marginal farmers.

The findings are similar with the findings of Meena (2001) who reported that there was a significant difference between beneficiary and non-beneficiary respondents and also significant difference within each category of respondents i.e. big, small and marginal farmers with respect to improved production practices of groundnut. The findings are contradictory with the findings of Menariya (2000).

Therefore, it is recommended that marginal and small farmers should be equipped more and more regarding improved practices. They should be persuaded strategically for increasing the adoption. Base level extension agent may play a crucial role in enhancement of adoption level of marginal and small farmers. Demonstration for comparison between improved and traditional practices of soybean cultivation in front of marginal and small farmers could be one of the most appropriate approaches for increasing level of adoption of the farmers.

**CONCLUSION**

It was observed that 46.03 per cent of the total respondents were found from medium adoption level followed by low (36.51%) and high (17.46%) adoption level. Highest adoption level were found in practices like recommended spacing, seed rate and harvesting/threshing and storage. There was a significant variation in the adoption of soybean production technology among all the three categories of respondents viz.; marginal, small and large farmers.

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