

# EXTENT OF ADOPTION OF SOYBEAN PRODUCTION TECHNOLOGIES BY SOYBEAN CULTIVATORS IN DIFFERENT REGIONS OF MAHARASHTRA STATE

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## ABSTRACT

*Soybean [Glycine max] is the world's natural source of protein. Soybean is the most important oilseed crop of the world. It is grown successfully in various agro-climatic conditions. A investigation was carried out, among the soybean cultivators for the year 2013-14, to study the extent of adoption of soybean production technologies by soybean cultivators in different regions of Maharashtra state. Results revealed that, with respect to extent of adoption of soybean cultivators on various components of soybean production technologies, extent of adopting use of seed rate (about 93-99 per cent) were near to the recommended level by all adopters group from all regions of Maharashtra. The exception was the technology of seed treatment and use of manures. So it is suggested that, low and medium adopters from all regions of Maharashtra should adopt the recommended technologies for maximizing the production of soybean.*

**Keywords:** *Extent of Adoption, Soybean Production*

## I. INTRODUCTION

A technology transfer programme would be considered effective if there is minimal or no gap between the potential and realized impacts of the technology. It means that, monitoring of adoption or adaptation of technologies is an integral part of the technology transfer system. Therefore, transfer of technology must be preceded and succeeded by technology assessment, reasserting that technology transfer and assessment are complementary processes. Adoption of improved production practices is the key to higher production of crops and higher incomes to farmers. The technical knowledge of farmers appears to be the key link to higher level of adoption. Once farmers acquire knowledge, they begin to use and apply improved practices in their fields. Even among farmers, there is a great variation in their levels of knowledge, as well as their readiness to accept, try new methods and adopt improved production practices. Some need more time to grasp and get convinced and hence need longer sustained support from extension agencies. Adoption of technology refers to actual practices adopted by the farmers for cultivation of particular crops. The State Agricultural Universities has undertaken various research programs for different crops. They have made various recommendations about technologies. The present study aims at analyzing, the extent of adoption of soybean production technologies by soybean cultivators in different regions of Maharashtra state.

## II. METHODOLOGY

As there is no production of soybean due unsuitable weather conditions in Konkan region of Maharashtra state, hence, only three regions viz., Western Maharashtra, Marathwada and Vidarbha were selected for the study of soybean where the area under these oilseed crops is concentrated. For the study of soybean, Ahmednagar (Western Maharashtra), Latur (Marathwada) and Amravati (Vidarbha) were selected on the basis of maximum area. Two tahsils from each district and two villages from each tahsil were selected. In all, twelve villages for soybean were selected for the study. The list of cultivators growing these oilseeds from the selected villages was prepared from revenue records at village level. For the study, 12 farmers were randomly selected from each village, i.e. 4 from small size group (i.e. 0.01-2.00 ha), 4 from medium size group (2.01 to 4.00 ha) and 4 from large size group (above 4.00 ha) on the basis of total size of holdings of the selected sample cultivators. Thus, total 144 farmers were selected for the present study. To study the extent of adoption of various recommended production technologies viz; the information on seed rate, seed treatment, varieties, sowing time, land preparation, fertilizer use, irrigation and plant protection was collected through a well-administered schedule by personal interview method. Simple tabular analysis was carried out to bring forth the conclusions.

### 2.1 Extent of Adoption of Technology

Actual level of adoption of each item of technology on farmers' field was identified using recommended technologies developed by SAU's, Maharashtra. Efficiency of each technology was calculated. All efficiencies score was scaled from zero to one.

Extent of adoption of each component of recommended technology was considered as one (01). Extent of adoption (EA) was worked out by using following formula,

$$EA = \frac{\text{Actual adoption}}{\text{Recommended technology}}$$

**Table 1. Technology wise extent of adoption for gram crop.**

| Sr. No. | Practices           | Extent of adoption   |
|---------|---------------------|--|
| 1.      | Preparatory tillage | $EA = \frac{\text{Preparatory tillage used by cultivators}}{\text{Recommended preparatory tillage}}$                 |
| 2.      | Time of sowing      | $EA = 1 - \frac{\text{No of days delayed for sowing}}{\text{Recommended time of sowing}}$                            |
| 3.      | Seed rate           | $EA = \frac{\text{Seed rate used by cultivators}}{\text{Recommended Seed rate}}$                                     |
| 4.      | Spacing             | $EA = 1 - \frac{\text{Spacing adopted by cultivators}}{\text{Recommended spacing}}$                                  |
| 5.      | Fertilizers (NPK)   | $EA = \frac{\text{Nutrient applied by cultivators (N, P and K)}}{\text{Recommended dose of nutrients (N, P and K)}}$ |
| 6.      | Irrigation          | $EA = \frac{\text{No of Irrigation}}{\text{Recommended Irrigations}}$  |

### III. RESULTS

#### 3.1 Extent of adoption of technologies in soybean cultivators in Western Maharashtra region

It is concluded from the Table (2) that, most of the farmers in Western Maharashtra under study, were adopting the technologies i.e. use of seed rate, preparatory tillage, use of variety, sowing time and application of nitrogen except technology of seed treatment. It was due to the time consuming and complicated seed treatment procedure [1].

**Table 2. Extent of adoption of technologies in soybean cultivators in Western Maharashtra region**

| Sr.No. | Technology          | Level of adoption (Per cent) |        |       |         |
|--------|---------------------|------------------------------|--------|-------|---------|
|        |                     | Low                          | Medium | High  | Overall |
| 1      | Preparatory tillage | 72.22                        | 75.36  | 87.76 | 78.45   |
| 2      | Variety             | 66.67                        | 78.26  | 90.00 | 78.31   |
| 3      | Sowing time         | 75.28                        | 81.01  | 80.00 | 78.76   |
| 4      | Spacing             | 50.00                        | 65.22  | 80.00 | 65.07   |
| 5      | Seed rate           | 95.72                        | 99.64  | 90.00 | 95.12   |
| 6      | Seed treatment      | 33.33                        | 39.13  | 50.00 | 40.82   |
| 7      | Manure              | 33.37                        | 46.03  | 72.92 | 50.77   |
| 8      | Nitrogen            | 79.67                        | 76.35  | 77.98 | 78.00   |
| 9      | Phosphorus          | 59.21                        | 67.52  | 60.00 | 62.24   |
| 10     | Irrigation          | 50.00                        | 55.07  | 66.67 | 57.25   |
| 11     | Plant protection    | 43.75                        | 56.52  | 50.00 | 50.09   |

#### 3.2 Extent of adoption of technologies in soybean cultivators in Marathwada region

It is observed from the Table (3) that, the extent of level of technology adoption viz.; sowing time, use of variety, application of nitrogen in Marathwada region was quite satisfactory. In medium and low adoption groups the extent of level of adoption of use of seed rate was at higher level. However, technology regarding seed treatment was found at lower extent in all adoption groups. It was due to unawareness about seed treatment among the farmers [2].

#### 3.3 Extent of adoption of technologies in soybean cultivators in Vidarbha region

It is indicated from the Table (4) that, in Vidarbha region, the technologies viz., use of seed rate and sowing time were adopted at greater extent by low and medium adopters group. Moreover, technology of seed treatment is low in all adoption groups. This is because of the fact, in study area that, cultivators are unaware about the importance and proper knowledge about seed treatment [3].

**Table 3. Extent of adoption of technologies in soybean cultivators in Marathwada region**

| Sr.No. | Technology          | Level of adoption (Per cent) |        |      |         |
|--------|---------------------|------------------------------|--------|------|---------|
|        |                     | Low                          | Medium | High | Overall |
| 1      | Preparatory tillage | 66.25                        | 77.5   | -    | 71.88   |
| 2      | Variety             | 75.78                        | 80.00  | -    | 77.50   |
| 3      | Sowing time         | 89.29                        | 83.33  | -    | 86.31   |
| 4      | Spacing             | 67.86                        | 70.00  | -    | 68.93   |
| 5      | Seed rate           | 89.39                        | 97.34  | -    | 93.37   |
| 6      | Seed treatment      | 57.14                        | 52.50  | -    | 54.82   |
| 7      | Manure              | 58.35                        | 43.31  | -    | 50.83   |
| 8      | Nitrogen            | 82.06                        | 73.26  | -    | 77.66   |
| 9      | Phosphorus          | 68.19                        | 40.84  | -    | 54.52   |
| 10     | Potassium           | 37.37                        | 31.65  | -    | 34.51   |
| 11     | Irrigation          | 50.00                        | 50.00  | -    | 50.00   |
| 12     | Plant protection    | 60.71                        | 62.50  | -    | 61.61   |

**Table 4. Extent of adoption of technologies in soybean cultivators in Vidarbha region**

| Sr.No. | Technology          | Level of adoption (Per cent) |        |      |         |
|--------|---------------------|------------------------------|--------|------|---------|
|        |                     | Low                          | Medium | High | Overall |
| 1      | Preparatory tillage | 78.57                        | 88.89  | -    | 83.73   |
| 2      | Variety             | 73.81                        | 83.33  | -    | 78.57   |
| 3      | Sowing time         | 83.33                        | 88.89  | -    | 86.11   |
| 4      | Spacing             | 64.29                        | 83.33  | -    | 73.81   |
| 5      | Seed rate           | 99.81                        | 99.87  | -    | 99.84   |
| 6      | Seed treatment      | 40.48                        | 41.67  | -    | 41.08   |
| 7      | Manure              | 56.09                        | 52.69  | -    | 54.39   |
| 8      | Nitrogen            | 78.13                        | 68.22  | -    | 73.18   |
| 9      | Phosphorus          | 46.23                        | 62.52  | -    | 54.38   |
| 10     | Irrigation          | 60.32                        | 66.67  | -    | 63.50   |
| 11     | Plant protection    | 66.67                        | 66.67  | -    | 66.67   |

## VI. CONCLUSIONS

The study has revealed that, major technology adopted by the soybean cultivator were seed rate (i.e. 93-99 per cent) and least technology adopted were manure, seed treatment and irrigation. So there exists a number of gaps in the application of various recommended technologies in the cultivation of soybean in Maharashtra. The soybean cultivator would achieve remunerative returns from cultivation of wheat if the adoption gaps are properly plugged. The agricultural scientists, extension scientists and state agricultural technocrats should re-launch awareness generation campaign to educate the soybean cultivator about the benefits of the use of the recommended dosages of various inputs in soybean cultivation in Maharashtra state.

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