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Adoption of recommended cultivation practices by soybean growers

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Abstract

The present study was conducted to assess the extent of adoption of recommended cultivation practices by soybean growers. Adoption of improved practices plays a vital role in enhancing productivity, profitability and sustainability of soybean cultivation. The study examined the level of adoption of various recommended practices. A total of 150 soybean growers were selected from fifteen villages in Akola district and data were collected using a structured interview schedule. Despite the availability of scientific recommended practices for soybean cultivation, a substantial gap was observed between the recommended practices and those actually adopted by farmers, resulting in lower productivity and high yield gap. Results indicated that soybean growers showed varying levels of adoption, with higher adoption in basic agronomic practices and lower adoption in scientific and input-intensive practices. The study highlights the need for strengthening extension services, capacity-building programs and timely availability of inputs to improve adoption of recommended cultivation practices among soybean growers.

Keywords: Adoption, soybean growers, recommended cultivation practices

Introduction

Soybean (*Glycine max* L.) is an important oilseed crop contributing significantly to agricultural income and soil health due to its nitrogen-fixing ability. Scientific research institutions have developed a package of recommended cultivation practices to increase soybean productivity. Adoption of recommended cultivation practices is influenced by awareness, accessibility and farmers' perception of technology. Therefore, understanding the adoption behavior of soybean growers is essential for planning effective extension interventions.

Objective

To study the adoption gap in soybean cultivation.

Methodology

An exploratory research design of social research was used in the present investigation. The sample was drawn from Akola taluka, Murtijapur taluka and Barshitakli taluka of Akola district of Maharashtra state, on the basis of having the highest area under soybean cultivation. Total 15 villages were selected purposively from Akola, Murtijapur and Barshitakli taluka and 10 farmers were drawn from each village thus in total 150 farmers constituted the sample size for the study. Data were collected through personal interviews using a pre-tested and structured interview schedule. The collected data were tabulated and analyzed using appropriate statistical tools such as mean, percentage and standard deviation for drawing meaningful interpretations and conclusions.

Results and Discussion

Practice wise extent of adoption in recommended practices of soybean cultivation

Adoption of recommended cultivation practices plays a vital role in enhancing crop productivity, input-use efficiency and sustainable farming. The findings obtained from the analysis of data on the adoption of these practices are discussed below.

Table 1: Distribution of respondents according to their adoption of recommended cultivation practices of soybean

Sr. No.	Recommended Cultivation practices of soybean crop	Adoption Respondents(n=150)	
		Adoption	No Adoption
1.	**Selection of Soil** Well drained and fertile loam soil	120 (80.00)	30 (20.00)
2.	**Preparatory tillage:** a.Ploughing- one deep ploughing	126 (84.00)	24 (16.00)
	b.Harrowing- two to three harrowing	132 (88.00)	18 (12.00)
3.	**Varieties** a.PDKV Amba b.Suvarna Soya c.PDKV Purva d.PDKV Yellow Gold e.JS 335 f.JS-20-116 g.KDS 726 h.JS-20-34 i.KDS 992 j.JS-93-05 k.MAUS -612 l.MAUS-158 m.KDS-753 n.MACS-1520 o.MAUS -162 p.MAUS-725 q.And others	150 (100.00)	0 (Nil)
4	**Seed rate** (65 – 75 kg/ha)	110 (73.33)	40 (26.67)
5.	**Spacing** (45 × 10 cm)	113 (75.33)	37 (24.67)
6.	**Depth of Sowing** (3 to 4 cm)	105 (70.00)	45 (30.00)
7.	**Seed treatment** Protection from fungal diseases – Before sowing treat seed with @ 3 gm Carboxin 37.5% + Thiram 37.5% DAS (mixture) (Vitavax powder) or Penflufen 13.28% + Trifloxystrobin 13.28% (Evergol) 1 mili or Thiophanate methyl + Pyraclostrobin (Xelora) @ 2.5 to 3 gm per seed.	70 (46.67)	80 (53.33)
8.	**Sowing Time** .15th June to 15 th July	124 (82.67)	26 (17.33)
9.	**Interculture Operation** 1. Hoeing 1st hoeing – 15 to 20 days after sowing 2nd hoeing if necessary	95 (63.33) 92 (61.33)	55 (36.67) 58 (38.67)
10.	**Intercropping** Tur + Soybean (1:2) Soybean + Sorghum + Tur (6:2:1) Soybean + Sorghum + Tur (9:2:1) Cotton + Soybean (1:1) Cotton + Soybean (1:2)	105 (70.00)	45 (30.00)
11.	**Fertilizer application** (30: 60:30 NPK /ha)	68 (45.33)	82 (54.67)
12.	**FYM Application** (5 tone/ha)	69 (46.00)	81 (54.00)
13.	**Control of Pest** Stem fly – Thiamethoxam 30 FS 10 mili per kilo seed treatment Soybean Girdle Beetle – Profenophos 50 EC 20 mili or Thiacloprid 15 mili. Hairy Caterpillar – Dusting of Carbaryl or Quinolphos @ 25- 30 kh/ha White fly- Spray crops with insecticides like Imidacloprid or Thiamethoxam when symptoms appear.	77 (51.33) 90 (60.00) 85 (56.67) 78 (52.00)	73 (48.67) 60 (40.00) 65 (43.33) 72 (48.00)
14.	**Control of Diseases** Charcol rot – Treat seeds with a fungicide like T. viride, P. Fluorescens, Thiram Yellow mosaic Virus – Use yellow sticky traps. Rhizoctonia Aerial Blight – Treat with fungicide like Azoxystrobin, Flutolanil Pod Blight – Use seed applied fungicide or seed treatment with Thiram, Captan, or Carbendazim	67 (44.67) 109 (72.67) 58 (38.67) 73 (48.67)	83 (55.33) 41 (27.33) 92 (61.33) 77 (51.33)
17.	**Harvesting** Drying & yellowing of leaves Brown colour of pods	130 (86.67)	20 (13.33)

The results indicated from Table 1, revealed that soil selection was adopted by 80.00 per cent of the respondents. In case of preparatory tillage**,** 84.00 per cent of respondents followed deep ploughing and 88.00 per cent followed harrowing. Regarding varietal adoption, an excellent 100.00 per cent of respondents adopted the recommended soybean varieties.

The adoption of recommended seed rate was found to be 73.33 per cent**.** Spacing was adopted by 75.33 per cent of the respondents, while depth of sowing had a slightly lower adoption rate at 70.00 per cent**.** Seed treatment was adopted by only 46.67 per cent of the respondents. The practice of timely sowing was adopted by 82.67 per cent of the respondents. In the case of intercultural operations**,** first hoeing was adopted by 63.33 per cent respondents**,** while second hoeing (if necessary) was adopted by 61.33 per cent of respondents. The adoption of intercropping was seen about 70.00 per cent of the respondent. Regarding nutrient management**,** 45.33 per cent of respondents adopted the recommended fertilizer application**,** 46.00 per cent adopted FYM (farmyard manure) application**.** In the area of pest management**,** adoption was varied, 51.33 per cent of respondents controlled stem fly**,** 60.00 per cent managed soybean girdle beetle**,** 56.67 per cent took action against hairy caterpillar and 52.00 per cent controlled whitefly**.** Adoption of disease control measures showed further variation. Charcoal rot management was adopted by 44.67 per cent respondents indicating low awareness. On the other hand yellow mosaic virus (YMV) had relatively better adoption at 72.67 per cent, possibly due to its high visibility and impact. Control of rhizoctonia aerial blight was found 38.67 per cent**,** showing that many respondents either fail to identify the disease or lack proper control measures. Adoption for pod blight control was relatively higher at 73.00 per cent indicating respondents are somewhat more aware of diseases that affect pod filling and grain quality. Finally in terms of harvesting**,** 86.67 per cent of respondents followed the recommended practices and the relatively small gap here 13.33 per cent suggests that most farmers understand its importance.

Table 2: Distribution of respondents according to their overall adoption of soybean practices.

Sr. No.	Adoption level	Respondents (n=150)	
		Frequency	Percentage
1.	Low (Up to 12.48)	27	18.00
2.	Medium (12.49 to 17.12)	102	68.00
3.	High (Above 17.12)	21	14.00
Total		150	100.00

Mean = 14.8 SD = 2.32

As revealed from Table 2, a majority of the soybean growers 68.00 per cent were found to possess a medium level of adoption regarding to the recommended cultivation practices of soybean crop. This was followed by 18.00 per cent who had a low level of adoption, while 14.00 per cent were observed to have a high level of adoption.

Conclusion

The results reflects a moderate level of adoption among soybean growers, indicating scope for improvement through effective extension efforts, need-based training programmes and timely dissemination of improved cultivation practices to enhance the overall adoption level.

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