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Constraints faced by soybean growers in adoption of integrated pest management practices and their suggestions to overcome it

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Abstract

The present study entitled “Adoption of Integrated Pest Management practices followed by soybean growers” was conducted in AUSA and Nilanga tehsils of Latur district of Maharashtra state. A sample of 120 respondents was drawn randomly from 12 villages. From each village 10 soybean growers were chosen from selected villages. Ex post facto research design was followed in present investigation. The constraints faced by the soybean growers in adoption of Integrated Pest Management practices were lack of knowledge about improved integrated pest management practices 89.16 percent, lack of information about bio-agent, bio-fertilizer, bio-pesticides 80.83 percent, less number of information/training centers 77.50 percent, lack of supply quality integrated pest management material 72.50 percent, Short shelf life of bio-agent etc. 66.66 percent, lack of storage facilities for integrated pest management material at rural areas 55.83 percent, lack of confidence to accept new integrated pest management technologies 46.66 percent and more risk involved in integrated pest management practices 37.50 percent.

The suggestions expressed by soybean growers such as 85.00 percent of the soybean growers suggested that disseminate easy-to-understand information in local languages. While 79.16 percent of the soybean growers suggested that conduct regular awareness programs and field demonstrations to educate farmers, 73.33 percent of soybean growers suggested that showcase successful case studies through field trials to reduce fear of failure, 65.83 percent of them suggested to improve distribution channels, encourage local production units, ensure quality certification and timely availability of materials, 60.00 percent of them suggested to develop low-cost, community-level storage infrastructure and offer government support or incentives for rural storage units and 76.66 percent of establish more decentralized training centers in rural areas.

Keywords: Integrated pest management practices, constraints, suggestion, soybean growers

Introduction

Soybean *Glycine max* (L.) Merrill, a vital oilseed and leguminous crop, belongs to the Fabaceae family and has a chromosome number of $2n = 40$. Native to East Asia, particularly China, soybean has been cultivated for over 5,000 years. Over time, it has become a globally significant crop due to its economic, nutritional, and industrial value. Rich in protein (approximately 40.00 percent) and oil (around 20%), soybean is widely used in human food, animal feed, and several industrial products such as biodiesel, soy-based plastics, and cosmetics. Its nitrogen-fixing ability also contributes to soil fertility, making it an environmentally beneficial crop.

Soybean grows best in loamy, well-drained soils with a neutral to slightly acidic pH range of 6.0 to 7.5. It requires moderate temperatures (25°C to 30°C) and rainfall between 500 mm and 1000 mm during its life cycle. The crop is sensitive to waterlogging, salinity, and poor drainage. Timely sowing, appropriate seed varieties, and effective field preparation are crucial for achieving optimal yields. While the crop is suited to a range of soil types, sustainable practices are essential to mitigate soil erosion and maintain fertility, especially in rainfed areas.

Maharashtra state area and production of soybean according to Third Advance Estimate 2024-2025 is area is 50.72 lakh hectare and production is 74.03 lakh tonnes. Leading top three district in Maharashtra under maximum area under soybean cultivation are Latur district has 5.00 lakh

hectare, Dharashiv district has 4.63 lakh hectare and Nanded district has 4.52 lakh hectare. The area and production of the Latur district according to the Third Advance Estimate 2024-2025 is area is 5.00 lakh hectare and production is 10.03 lakh tonnes (Source- Department of Agriculture, Government of Maharashtra).

The area of Ausa and Nilanga tehsils under soybean cultivation in kharif 2024-25 is 64,809 hectare and 69,511 hectare respectively (source- Department of Agriculture, Latur district). The increased use of pesticides not only raises production costs but also reduces biodiversity and affects ecological balance. To address these issues, Integrated Pest Management has emerged as a sustainable and scientifically backed solution. Integrated Pest Management is a holistic approach to pest control that combines cultural, mechanical, biological, and chemical methods to manage pests in an environmentally and economically sound manner. The main goal of Integrated Pest Management is to reduce pest populations to levels that do not cause economic damage while minimizing harm to beneficial organisms, human health, and the environment. Integrated pest management is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices.

Integrated Pest Management programmes use current, comprehensive information on the life cycle of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economic means, and with the least possible hazard to people, property, and the environment. The Integrated Pest Management approach can be applied to both agricultural and non-agricultural settings, such as the home, garden, and workplace. Integrated Pest Management takes

advantage of all appropriate pest management option including, but not limited to, the judicious use of pesticides.

In contrast, organic food production applies many of the same concepts as Integrated Pest Management but limits the use of pesticides to those that are produced from natural sources, as opposed to synthetic chemicals.

Materials and Methods

The present study was conducted in the Latur district of the Marathwada region of Maharashtra state. From this region Latur district was selected purposively for research purpose due to maximum area under soybean cultivation. From Latur district only two tehsils were selected Ausa and Nilanga purposively based on maximum area under soybean cultivation under the Latur district. From each selected tehsil six villages were randomly selected. Thus, total 12 villages were selced for the study. From each villages 10 respondents were selected randomly. Thus, a total of 120 respondents were selected as sample respondents for this study. These selection were done by using a simple random sampling method. The ex post facto research design used for present study. An interview schedule was prepared in view of the objective of the study and data were collected by personal interview of the selected soybean growers at their home or farms. The collected data was organised, tabulated and analyzed with help of statistical tools like frequency, mean, standard deviation, correlation of coefficient (r).

Results and Discussion

Constraints faced by soybean growers in adoption of Integrated Pest Management practices

Table 1: Constraints faced by soybean growers in adoption of Integrated Pest Management practices

SL. No.	Constraints	Frequency	Percentage	Rank
1.	Lack of knowledge about improved integrated pest management practices.	107	89.16	I
2.	Lack of information about bio-agent, bio-fertilizer, bio-pesticides.	97	80.83	II
3.	More risk involved in integrated pest management practices.	45	37.50	VIII
4.	Lack of confidence to accept new integrated pest management technologies.	56	46.66	VII
5.	Lack of supply quality integrated pest management material	87	72.50	IV
6.	Short shelf life of bio-agent etc.	80	66.66	V
7.	Less number of information/training centers.	93	77.50	III
8.	Lack of storage facilities for integrated pest management material at rural areas.	67	55.83	VI

From the table 1: It was observed that, the constraints faced by the soybean growers in adoption of integrated pest management practices in Latur district of Marathwada region. In that major constraint faced by soybean growers were lack of knowledge about improved integrated pest management practices 89.16 percent, lack of information about bio-agent, bio-fertilizer, bio-pesticides 80.83 percent, less number of information/training centers 77.50 percent, lack of supply quality integrated pest management material 72.50 percent, Short shelf life of bio-agent

etc. 66.66 percent, lack of storage facilities for integrated pest management material at rural areas 55.83 percent. Lack of confidence to accept new integrated pest management technologies 46.66 percent and more risk involved in integrated pest management practices 37.50 percent.

Suggestions made by the soybean growers to overcome the constraints

Table 2: Suggestions obtained from soybean growers to overcome the constraints

SL. No.	Suggestion	Frequency	Percentage	Rank
1.	Conduct regular awareness programs and field demonstrations to educate farmers.	95	79.16	II
2.	Disseminate easy-to-understand information in local languages.	102	85.00	I
3.	Showcase successful case studies through field trials to reduce fear of failure.	88	73.33	III
4.	Improve distribution channels and encourage local production units. Ensure quality certification and timely availability of materials.	79	65.83	IV
5.	Develop low-cost, community-level storage infrastructure. Offer government support or incentives for rural storage units.	72	60.00	V
6.	Establish more decentralized training centers in rural areas.	67	55.83	VI

It is revealed from table 2 that, 85.00 percent of the soybean growers suggested that disseminate easy-to-understand information in local languages. While 79.16 percent of the soybean growers suggested that conduct regular awareness programs and field demonstrations to educate farmers, 73.33 percent of soybean growers suggested that showcase successful case studies through field trials to reduce fear of failure, 65.83 percent of them suggested to improve distribution channels, encourage local production units, ensure quality certification and timely availability of materials, 60.00 percent of them suggested to develop low-cost, community-level storage infrastructure and offer government support or incentives for rural storage units and 76.66 percent of establish more decentralized training centers in rural areas.

Conclusion

The constraints faced by the soybean growers in adoption of Integrated Soybean Trash Management Technology were lack of knowledge about improved integrated pest management practices 89.16 percent, lack of information about bio-agent, bio-fertilizer, bio-pesticides 80.83 percent, less number of information/training centers 77.50 percent, lack of supply quality integrated pest management material 72.50 percent, Short shelf life of bio-agent etc. 66.66 percent, lack of storage facilities for integrated pest management material at rural areas 55.83 percent, lack of confidence to accept new integrated pest management technologies 46.66 percent and more risk involved in integrated pest management practices 37.50 percent. The suggestions expressed by soybean growers such as 85.00 percent of the soybean growers suggested that disseminate easy-to-understand information in local languages. While 79.16 percent of the soybean growers suggested that conduct regular awareness programs and field demonstrations to educate farmers, 73.33 percent of soybean growers suggested that showcase successful case studies through field trials to reduce fear of failure, 65.83 percent of them suggested to improve distribution channels, encourage local production units, ensure quality certification and timely availability of materials, 60.00 percent of them suggested to develop low-cost, community-level storage infrastructure and offer government support or incentives for rural storage units and 76.66 percent of establish more decentralized training centers in rural areas.

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