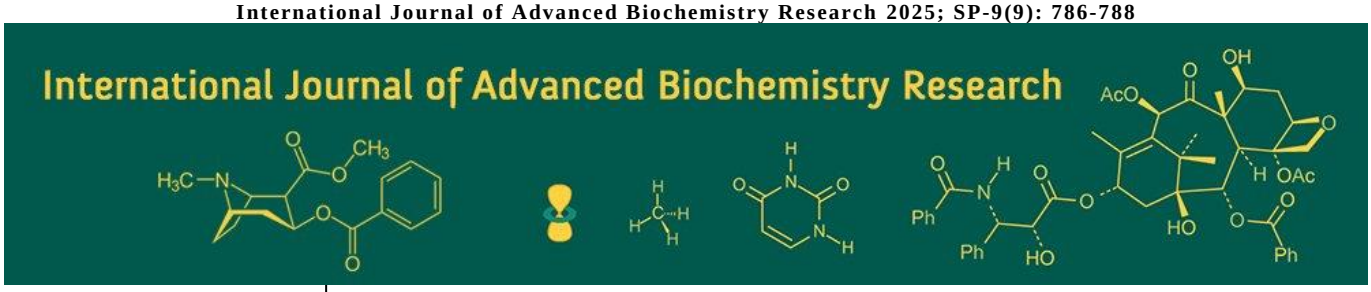

ISSN Print: 2617-4693
ISSN Online: 2617-4707
NAAS Rating (2025): 5.29
IJABR 2025; SP-9(9): 786-788
www.biochemjournal.com
Received: 24-07-2025
Accepted: 27-08-2025

Swaraj A Balshetwad
M.Sc. Scholar, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

Shankar G Puri
Assistant Professor, Department of Community Extension and Communication Management, College of Community Science, VNMKV, Parbhani, Maharashtra, India

Rajesh P Kadam
Professor and Head, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

Anuradha S Lad
Assistant Professor, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

Digambar S Perke
Associate Dean and Principle, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

Corresponding Author:
Swaraj A Balshetwad
M.Sc. Scholar, Department of Agricultural Extension Education, College of Agriculture, VNMKV, Parbhani, Maharashtra, India

Adoption of integrated pest management practices followed by soybean growers

Swaraj A Balshetwad, Shankar G Puri, Rajesh P Kadam, Anuradha S Lad and Digambar S Perke

DOI: https://www.doi.org/10.33545/26174693.2025.v9.i9Sj.5596

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. It was found that majority (75.00%) of soybean growers had medium level of adoption of integrated pest management practices, while 14.17 percent and 10.83 percent of soybean growers had low and high level of adoption, respectively about Integrated Pest Management practices.

Keywords: Adoption, integrated pest management practices, 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 samping method. The ex post facto research design used for present study. An interview schedule was prepared in view of the ojective 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

The data revealed in the table 1 showed that from Cultural practices, the deep ploughing during summer helps destroy dormant stages of pests by exposing them to sunlight 60.83 percent were completely adopted and 12.50 percent were partially adopted. Timely sowing, proper seed rate and seed spacing 52.50 percent were completely adopted and 24.17 percent were partially adopted. Growing of trap crop like castor to attract leafy-eating caterpillar 25.00 percent were completely adopted and 35.00 percent were partially adopted. Use of pest resistant variety of soybean e.g., MAUS 725 etc. 35.00 percent were completely adopted and 30.00 percent were partially adopted. Crop rotation followed in farm 61.67 percent were completely adopted and 15.00 percent were partially adopted. Maintain field sanitation 59.17 percent were completely adopted and 20.83 percent were partially adopted.

Table 1: Distribution of soybean growers frequency wise according to their adoption of integrated pest management practices

SL. No.	Practices	Complete adoption		Partially adoption		No adoption	
A.	**Cultural practices**	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
1.	Deep ploughing during summer helps destroy dormant stages of pests by exposing them to sunlight	73	60.83	15	12.50	32	26.67
2.	Timely sowing, proper seed rate and seed spacing	63	52.50	29	24.17	34	28.33
3.	Growing of trap crop like castor to attract leafy-eating caterpillar	30	25.00	42	35.00	48	40.00
4.	Use of pest resistant variety of soybean eg., MAUS 725 etc	42	35.00	36	30.00	42	35.00
5.	Crop rotation followed in farm	74	61.67	18	15.00	28	23.33
6.	Maintain field sanitation	71	59.17	25	20.83	24	20.00
B.	**Mechanical practices**						
1.	Identify and remove pest-infested plants or plant parts and destroy them away from the field	66	50.83	29	24.17	25	20.83
2.	Manage alternative host plants and weeds that support pest populations.	79	65.83	15	12.50	26	21.67
3.	Use of Pheromone trap	51	42.50	37	30.83	38	31.67
4.	Use of Bird perches	58	48.33	29	24.17	33	27.50
5.	Use of Light trap	36	30.00	41	34.17	43	35.83
6.	Uproot and destroy plants infested with stem fly and girdle beetle.	29	24.17	38	31.67	53	44.17
C.	**Chemical practices**						
1.	Seed treatment of soybean to control diseases and pest attack with e.g., 1) Imidacloprid 48% FS 2) Thiamethoxam 30% FS. etc.	58	48.33	27	22.50	35	29.17
2.	Knowledge about Economic Threshold Level (ETL)	77	64.17	13	10.83	30	25.00
3.	Apply recommended insecticides only when pest populations exceed the Economic Threshold Level (ETL)	44	36.67	32	26.67	44	36.67
4.	Use effective insecticides such as e.g., 1. Chlorantraniliprole 18.5% SC 2. Emamectin Benzoate 1.9% EC. etc.	45	37.50	29	24.17	46	38.33
5.	Use different types of insecticides to stop pests from becoming resistant	29	24.17	51	42.50	40	33.33
D.	**Biological control practices**						
1.	Identification of beneficial insect	55	45.83	28	23.33	37	30.83
2.	Use of 5% NSKE for pest management	62	51.67	28	23.33	30	25.00
3.	Use of Parasitoid for control of pest like Trichogramma spp. and Encarsia Formosa	17	14.17	50	41.67	53	44.17
4.	Use of HaNPVs for control of Lepidopteran larvae	18	15.00	27	22.50	75	62.50

From Mechanical practices, Identify and remove pest-infested plants or plant parts and destroy them away from the field 50.83 percent were completely adopted and 24.17 percent were partially adopted. Manage alternative host plants and weeds that support pest populations 65.83 completely adopted and 12.50 percent were partially adopted. Use of Pheromone trap 42.50 percent were completely adopted and 30.83 percent were partially adopted. Use of Bird perches 48.33 percent were completely adopted and 24.17 percent were partially adopted. Use of Light trap 30.00 percent were completely adopted and 34.17 percent were partially adopted. Uproot and destroy plants infested with stem fly and girdle beetle 24.17 percent were completely adopted and 31.67 percent were partially adopted.

From chemical practices, Seed treatment of soybean to control diseases and pest attack Imidacloprid or Thiamethoxam etc., 48.33 percent were completely adopted and 22.50 percent were partially adopted. Knowledge about Economic Threshold Level (ETL) 64.17 percent were completely adopted and 10.83 percent were partially adopted. Apply recommended insecticides only when pest populations exceed the Economic Threshold Level (ETL) 36.67 percent were completely adopted and 26.67 percent were partially adopted. Use effective insecticides such as Chlorantraniliprole or Emamectin, etc., 37.50 percent were completely adopted and 24.17 percent were partially adopted. Use different types of insecticides to stop pests from becoming resistant 24.17 percent were completely adopted and 42.50 percent were partially adopted.

From Biological practices, Identification of beneficial insect 45.83 cent were completely adopted and 23.33 percent were partially adopted. Use of 5% NSKE for pest management 51.67 cent were completely adopted and 23.33 percent were partially adopted. Use of Parasitoid for control of pest like Trichogramma spp. and Encarsia Formosa 14.17 cent were completely adopted and 41.67 percent were partially adopted. Use of HaNPVs for control of Lepidopteran larvae 15.00 cent were completely adopted and 22.50 percent were partially adopted.

Table 2: Distribution of soybean growers according to their level of adoption about integrated pest management practices

SL. No.	Category	Frequency	Percentage
1	Low (Up to 18)	17	14.17
2	Medium (19 to 28)	90	75.00
3	High (Above 29)	13	10.83
Total		120	100

It is observed from table 2 that majority 69.17 percent of respondents had a medium level of adoption while, 16.67 percent of them had low level of adoption and 14.16 percent of soybean growers had high level of adoption.

The finding were similar with results of Poshiya *et al.* (2020) [2], Rathod *et al.* (2018) [3] and Padwal *et al.* (2018) [1]

Conclusion

It is seen that majority (69.17%) of soybean growers had medium level of adoption. Thus, it can be said that adoption level of majority of soybean growers was satisfactory. As farmers are now aware about the benefits of Integrated pest Management practices and also, they have experienced benefits of Integrated Pest Management practices they are more adopting these practices. Hence increase in mass media there is more availability of information regarding Integrated Pest Management. This led to medium level of adoption of the integrated pest management practices by soybean growers.

Reference

1. Padwal D, Jahanar MH, Bose DK, Srivastava JP. A study on knowledge of Bt cotton cultivation practices in Rangareddy district of Telangana. J Pharmacogn Phytochem. 2018;7(3):2204-2205.
2. Poshiya VK, Tiwari MV, Verma PD, Tale NN. Adoption level of recommended paddy technologies among tribal farmers in Narmada district. Asian J Ext Educ. 2020;38:80-83.
3. Rathod GV, Salane SP, Deokate N. Knowledge and adoption of improved cultivation practices by sugarcane growers. Int J Chem Stud. 2018;6(6):653-654.
4. Bueno AD, Panizzi AR, Hunt TE, Dourado PM, Pitta RM, Gonçalves J. Challenges for adoption of integrated pest management (IPM): the soybean example. Neotrop Entomol. 2021;50(1):5-20.
5. Bortolotto OC, Pomari-Fernandes A, de Freitas Bueno RC, de Freitas Bueno A, da Cruz YK, Sanzovo A, Ferreira RB. The use of soybean integrated pest management in Brazil: a review. Agron Sci Biotechnol. 2015;1(1):25-30.