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Constraints faced by vegetable growers in adoption of IPM in Jabalpur district of Madhya Pradesh

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Abstract
The paper studies on "Constraints faced by vegetable growers in adoption of IPM in Jabalpur district of Madhya Pradesh". The study was conducted in Shahpura block of Jabalpur district, Madhya Pradesh which is a major vegetable growing block in the state. In this study the problems encountered by the growers while implementing the integrated pest management techniques were measured. For the study, 120 vegetable growers were selected. Vegetable growers were asked to enlist the problems they faced during the application of integrated pest management. The problems were ranked by using the Garett Ranking Technique. The major findings of the study were that majority of the farmers were lacking knowledge about the usage of bio-pesticides (Rank=I) followed by most of them said that there were lack of trainings on efficient implementation of IPM technologies (Rank= II) and lack of supply of quality bio-pesticides in the region.

Keywords: Integrated pest management, vegetable growers, Garett ranking

Introduction
Diseases, weeds, and insect pests are the main things preventing an increase in agricultural productivity. One of the main obstacles to increasing agricultural crop productivity is the presence of pest problems. An estimated 26% of the potential food supply is consumed by herbivorous insects. Due to pests and diseases, India loses over 30% of its crops annually [Sharma and Rao, 2012] [1]. In vegetable production, insect pests cause crop losses of up to 40% [Gaurav, 2011] [2]. Over time, there has been a rising tendency in the production losses. The anticipated cost of losses resulting from insect infestations in 1983 was Rs 6,000 crores [Rao and Murthy, 1983] [3], rising to Rs 20,000 crores in 1993 [Jayaraj, 1993], and to Rs 29,000 crores in 1996 [Dhaliwal, 1996] [5]. A vast variety of substances are included under the umbrella word "pesticide," such as plant growth regulators, fungicides, herbicides, insecticides, rodenticides, molluscicides, and nematicides. Since the early 1970s, the use of pesticides has increased in India at a rate of 2.5 percent each year. In India, the amount of pesticide used rose from 15 g/ha of gross grown in 1955–1956 to 90 g/ha in 1965–1966. The introduction of green revolution technology in the middle of the 1960s encouraged the use of pesticides, which rose to 266 g/ha in 1975–1976 and peaked at 404 g/ha in 1990–1991 [Birthal, 2003] [6]. Currently, the nation produces about 96,000 tonnes of technical grade pesticides, of which two thirds are used in agriculture [Khan, 1996] [7].
Crop yields increased significantly as high yielding cereal cultivars were adopted. The usage of pesticides increased dramatically as a result of maintaining better yields, from 5,700 tonnes in 1960 to 46,195 tonnes in 2000. Pesticides are used carelessly in India, despite the fact that the country uses roughly 250g of pesticides per acre [Dhaliwal, 1996] [5]. When used properly, pesticides can provide safe, wholesome, and reasonably priced food, as well as support sustainable farm management by increasing the efficiency with which natural resources like soil, water, and land use are used. All pesticides need to be poisonous or biologically active in order to work against the pests they are meant to control. Pesticides pose a risk to people, animals, other living things, and the environment since they are poisonous. Constant use of chemical inputs, such as pesticides, has harmed human health, damaged the environment, and decreased the sustainability and productivity of agriculture. Both the vegetation and fauna have suffered. There have been numerous documented short- and long-term consequences on human health. Human fatalities are not unusual.

IPM, an environmentally friendly method of controlling pest populations, should be promoted. It uses plant-based insecticides like neem formulations, biopesticides, and mechanical and biological control, with a focus on crop rotation and crop rotation. Use of pesticides should only occur when the population of pests exceeds a certain economic threshold. For thousands of years, onions have been farmed over nearly all of India. They are a significant vegetable. Even while India produces a sizable amount of onions, it does not produce enough of them on a regular basis to meet demand both domestically and internationally. The indiscriminate application of pesticides in the intensive agronomic practises of onion growing had an impact on the farm's profitability. The scientists created a bundle of six integrated pest management (IPM) techniques for onions to use in the fight against the pests. Using integrated pest management (IPM) could offer a reasonable and practical foundation for vegetable pest control.

Materials and Methods

The present study was conducted in the purposively selected Shahpura block of Jabalpur district of Madhya Pradesh as the block has maximum production as well as area covered under vegetable crops among all the other blocks in the district. Shahpura block consists of 226 villages out of which 5 villages were selected namely Sihoda, Dighoda, Kheri, Belkheda and Dharampura. The respondents were selected with the help of simple random sampling method. The sample comprises of 120 respondents having 24 farmers selected from each village. IPM practices namely cultural, mechanical, biological and chemical were selected and for assessing the constraints faced by the growers, the respondents were asked to mention constraints which had influenced their decision to non-adoption of the recommended IPM practices. The data were analyzed with the help of suitable statistical tools such as frequency, percentage and Garett ranking method was used to rank the constraints accordingly. As per this method, respondents were asked to respond their extent of participation in different activities and converted into score value with the help of the following formula

$$\text{Percent position} = \frac{100\ (\text{Rij} - 0.5)}{\text{Nj}}$$

Where,
Rij = Respond given for the i^{th} variable by j^{th} respondents.
Nj = Number of variable ranked by j^{th} respondents.

Results and Discussion

Table 1: Constraints regarding adoption of recommended IPM practices

S. No.	Constraints	Garett Score	Rank
1	Need of more labour	44.93	XII
2	High cost of traps like light trap	57.76	VI
3	Lack of knowledge of improved varieties of vegetables	57.60	VII
4	Lack of knowledge about crop rotation	45.73	XI
5	Lack of training on IPM practices	62.51	II
6	Lack of knowledge about insect life cycle and their infestation	54.12	VIII
7	Lack of proper knowledge about insect damaging stage	43.45	XIII
8	Lack of knowledge about use of bio-pesticides	65.36	I
9	Lack of proper machineries for field sanitation & deep ploughing	59.18	IV
10	Lack of knowledge about inter-cropping	50.79	IX
11	Lack of supply of good quality bio-pesticides	61.88	III
12	Lack of government subsidy on IPM measures	58.28	V
13	Unavailability of neem cake on local level	46.68	X

It is evident from the Table 1. that constraints regarding adoption of recommended IPM practices, “lack of knowledge use of bio-pesticides”(Garett score=65.36), lack of training on IPM practices (Garett score=62.51), “lack of supply of good quality bio-pesticides”(Garett score=61.88), “lack of proper machineries”(Garett score=59.18), “lack of government subsidy on IPM measures” (Garett score=58.28), “high cost of traps like light traps”(Garett score=57.79), “lack of knowledge of improved varieties of vegetable” (Garett score=57.60), “lack of knowledge about insect life cycle and their infestation” (Garett score=54.12), “lack of knowledge about inter-cropping”(Garett score=50.79), “unavailability of neem cake on local level”(Garett score=46.68), “lack of knowledge about crop rotation”(Garett score= 45.73), “labour intensive practices” (Garett score=44.93) and “lack of proper knowledge about insects damaging stage”(Garett score=43.45). Krishnamurthy *et al*. (2005) [10] also concluded the same constraints that hinder the adoption process. The findings show that the IPM-FFS training programme had failed to increase the knowledge and skill of respondents. Kumari (2012) [9] also concluded in a similar study to re-orient IPM-FFS programme and provide the farmers’ skill oriented training of IPM and emphasis should be given to practices where the farmers need knowledge and skill which in turn can facilitate the adoption of IPM practices

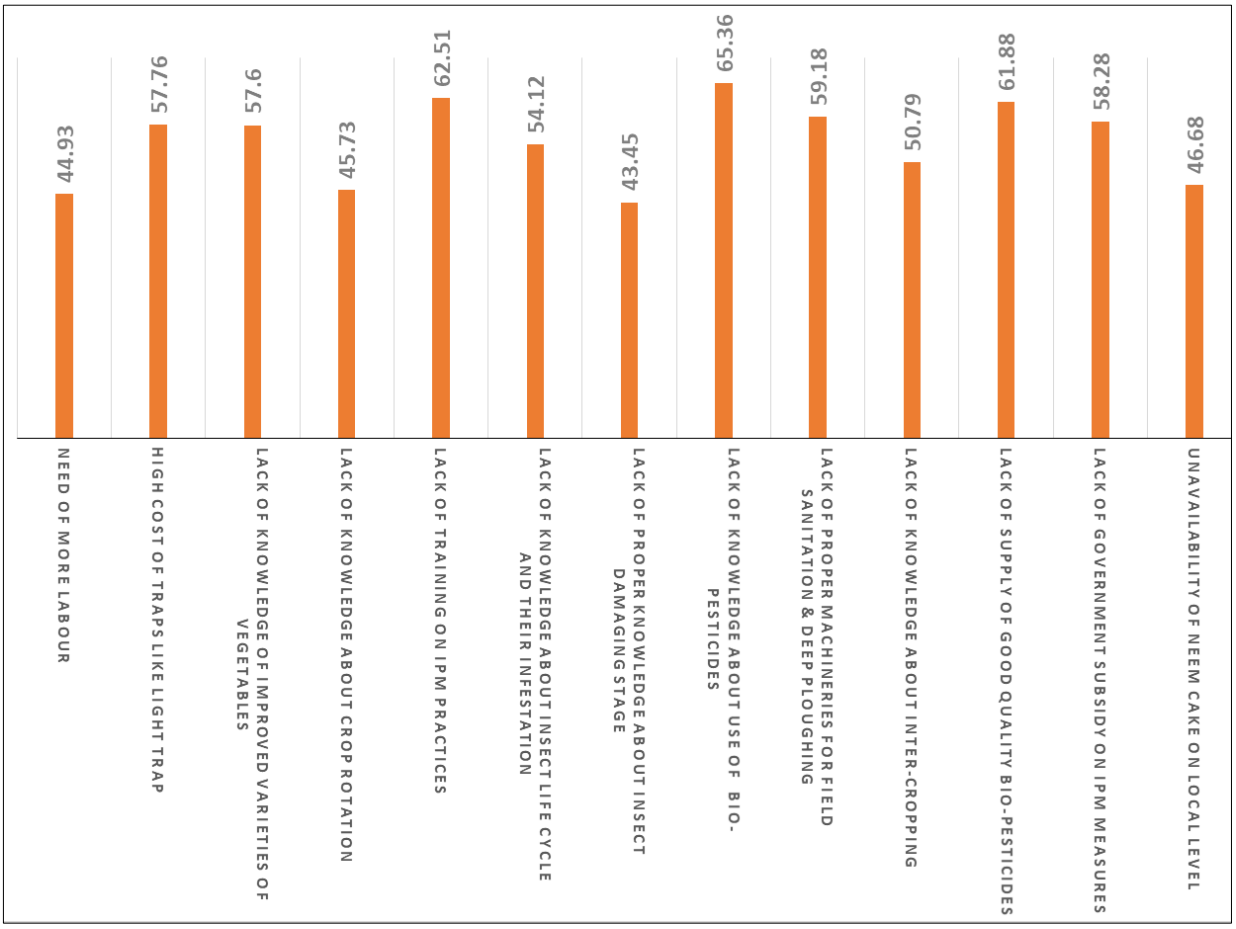

Fig 1: Garett score

Conclusion

The findings showed that the main barrier to the implementation of various IPM practices is a lack of information. Another significant barrier mentioned by the respondents was a lack of skill. This indicates that the farmers were not given the opportunity to gain more experience and expertise through the IPM training programme. The respondents also identified the lack of IPM tools and inputs as well as the arduous and complex nature of IPM practises as the main barriers to IPM adoption. It was necessary to extend the duration of the training programme from the time of seed sowing to crop harvest in order to raise farmers' awareness of every facet of IPM technology. Farmers with IPM training should be required to attend periodic refresher courses. Farmers should have easy access to affordable IPM instruments and inputs. IPM technology is rather complicated and necessitates a good level of knowledge gain. In the process of sharing knowledge, extension agents ought to take on more of a collaborative, consultative, and facilitative role. Farmers' understanding of IPM technology should be raised through field trips, demonstrations, and various forms of mass media. Choose young farmers for the IPM-FFS training programme if at all possible, as they are most suited to absorb the most information and implement IPM techniques.

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