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Relationship between Profile characteristics of vegetable growers and extent of adoption of IPM practices in Jabalpur district of Madhya Pradesh

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Abstract
IPM is a technology that is built on knowledge. It entails combining various disease and pest management techniques to combat major crop diseases and pests. The study was carried out to know the relationship between the characteristics of vegetable grower and their extent of adoption of IPM practices in Jabalpur district of Madhya Pradesh over a complete sample of 120 beneficiaries during 2021. The result shows that education, experience of vegetable cultivation, social participation, training received about IPM practices, size of land holding, annual income, occupation, extension contact, mass media exposure, economic motivation, scientific orientation, risk orientation, knowledge level about IPM practices and attitude towards IPM practices had significant related with the extent of adoption of integrated pest management practices. While, characteristics viz; age, size of family and area under vegetable cultivation had non-significant relationship with adoption level of vegetable growers.

Keywords: vegetable growers, IPM practices, relationship

Introduction
Agriculture is the backbone of the Indian economy, about 14.39 percent of the national income comes from the agricultural sector and more than 70 per cent of its population is directly or indirectly dependent on agriculture for livelihood an India is primarily a vegetarian country that ranks second in the world in vegetable output. After West Bengal, Uttar Pradesh, and Bihar state, Madhya Pradesh ranks fourth in vegetable production. In 2018-19, Madhya Pradesh has 929761 hectares for vegetable agriculture, producing 18208791 tons of vegetables (Horticulture statistics).Vegetables also play an important role in the maintenance of human health. These make diet nutritive and balanced. Excessive use of chemical pesticides produces environmental imbalances, environmental contamination, health risks, etc. The development of pesticides resistance also contributed to lose of beneficial insects and micro- organisms even the fertility of soil is adversely affected due to repeated applications of pesticides. According to the National Academy of Sciences, IPM refers to an ecological approach to the management of pests in which all the necessary techniques are consolidated in a single program in order to manage the population of pests in such a way a means of avoiding economic harm and mitigating harmful side effects. The goal of IPM is to control population of the pest below the level that result in economic losses. Ideally, this is achieved through the integration of all suitable control techniques in a compatible manner Integrated Pest Management is one of such systematic approach which emphasizes not only the reduction in use of pesticides and keeping below the level of pest causing economic injury but also it facilitates the use of cultural, mechanical, biological and chemical methods of control in an integrated manner and restores ecological balance for sustainable agriculture. IPM is a knowledge-based technology. It involves integration of different methods of disease and pest management to manage important disease or pest of crops.

Methodology
The study was conducted in Shahpura lock of Jabalpur district with a 120 beneficiaries during 2021. Shahpura block was selected purposively on the basis of maximum production as well as area covered under vegetable crops. The socio personal, agro economical, communicational and psychological variables were studied to know the relationship between the profile of vegetables growers with extent of adoption of IPM practices.

To evaluate the relationship between the dependent variable and the independent variable the data was put to correlation coefficient.

Result and Discussion

Table 1 shows that majority of the farmers were belongs to medium category like, age group (50.00%), family size (51.67%), social participation (40.33%), land holding (45.00%), annual income (59.67%), extension contact (47.50%), mass media exposure (45.33%), economic motivation (45.00%), risk orientation (45.00%), knowledge level (49.67%), attitude towards IPM (52.50%), adoption level (45.00%). Scientific orientation (43.33%). received one training (51.67%), maximum farmers had medium land holding (45.00%) and had agriculture as main occupation (39.67%). Whereas, Majority farmers were educate up to higher secondary (34.67%), 30.00% respondents had up to 1 ha. area under vegetable cultivation and similarly, it was observed that maximum vegetable growers had medium adoption level (45.00%) of IPM practices.

Table 1: Shows that majority of the farmers

S. No.	Variables	Correlation Coefficient
Independent Variables		
I. Socio-Personal Variables		
1	Age	0.178^{NS}
2	Education	0.195*
3	Experience of vegetable cultivation	0.185*
4	Size of family	0.099^{NS}
5	Social participation	0.186*
6	Training received about IPM Practices	0.198*
II. Economical Variables		
7	Size of landholding	0.186*
8	Annual income	0.196*
9	Occupation	0.200*
10	Area under vegetable cultivation	0.030^{NS}
III. Communicational Variables		
11	Extension contact	0.189*
12	Mass media exposure	0.180*
IV. Psychological Variables		
13	Economic motivation	0.188*
14	Scientific orientation	0.223*
15	Risk orientation	0.181*
16	Knowledge level about IPM Practices	0.193*
17	Attitude towards IPM Practices	0.226*

Age: Age of vegetable growers had non-significant relationship with adoption level of IPM. The finding is supported by Rajpoot (2011) [6].

Education: Education level of vegetable growers showed significant relationship with adoption level. This may be due to that as education increases awarness about the health and environmental threats due to overuse of instectisides and therefore to cope up with this they were shifting toward adoption of IPM practices. The works of Choudhary *et al.* (2010) & Rajpoot (2011) [1, 6].

Experience of Vegetable Cultivation: The relationship between experience of vegetable cultivation and adoption level was found to be significant. The finding is supported by Jeder *et al.* (2018) [3].

Size of family: Family Size and level of adoption were found to be had non-significant relationship. The finding is supported by Singh (2015) [8].

Social participation: Social participation and level of adoption were found to be had sign ificant relationship. It could be noted to the fact that meetings held in various social institutions in villages aware farmers about various IPM practices and their benefits. The works of Rajpoot (2011) [6].

Training received about IPM: The relationship between training received about IPM by vegetable growers and adoption level is positively significant. It could be noted that training is a process by which desired knowledge, skills and attitude are inculcated in an individual. Through proper training desired actions and attitude can be fostered and leads to the greater adoption of the technology. The findings are supported by Rathod *et al.* (2016) [7].

Size of land holding: The relationship between size of land holding and adoption level were found to be significant. The finding is supported by Rajpoot (2011) [6].

Annual income: Annual income of vegetable growers and adoption level of IPM practices were found to be had significant relationship. The finding is supported by Rajpoot (2011) [6].

Occupation: The relationship between occupation and adoption level of IPM practices were found to be significant. The works of Dalmia and Kumar (2018).

Area under vegetable cultivation: Study were found to be had non-significant relationship with adoption level of IPM practices. The finding is supported by Gavade (2013).

Extension contact: The relationship between extension contact of vegetable growers and adoption level were found to be had significant relationship. The finding is supported by Adsul (2016).

Mass media exposure: The relationship between mass media exposure of vegetable growers and adoption level were found to be had significant relationship. The finding is supported by Rajpoot (2011) [6].

Economic motivation: Economic motivation of vegetable growers and adoption level were found to be had significant relationship. The works by Rajpoot (2011) [6]. The reason may be that vegetables crops generate high income and also it is very susceptible to insect and pest. Therefore, in order to get good yield and income it is necessary to protect crop from insect and pest as well as to reduce the harmful effects of application of insecticides and pesticides, IPM practices seems to be perfect alternative which not only protect the crop but also reduces the cost of cultivation which was otherwise invested on purchasing costly insecticides and pesticides.

Scientific orientation: Scientific orientation of vegetable growers and adoption level were found to be had significant relationship. The finding is supported by Rajpoot (2011) [6].

Risk orientation: Risk orientation of vegetable growers and adoption level were no found to be had significant

relationship. This may be due to the fact that famers engrossed in adopting new technology which increases the crop productivity as well as gives healthy product to ensure good market value IPM helps them to get good quality product and price in the market. The finding is supported by Agrawal *et al.* (2016).

Knowledge level about IPM practices: The relationship between knowledge level about IPM practices and adoption level were found to be had significant. The finding is supported by Choudhary *et al.* (2010) [1] & Rajpoot (2011) [6].

Attitude towards IPM practices: Attitude towards IPM practices of vegetable growers and adoption level were found to be had significant relationship. The finding is supported by Nayta (2010) [5] & Rajpoot (2011) [6].

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