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## Degree of relationship of potato growers about knowledge of IPM practices

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### Abstract

This study examined the in Milkipur block of Faizabad district of Uttar Pradesh to know the training gap of mustard growing farmers during the agricultural year 2014-15. A sample of one hundred farmers was selected randomly from the list of 5 purposively selected villages for collection of primary data. A well structured and pretested interview schedule was used for data collection through personal interview method. Any training programme to be very effective must have optimum size of trainees. This provides equal opportunities to the participant to experience their learning. Taylor (1991) elaborated the meaning of training as "The means to bring about a continuous improvement in the quality of work performed by the staff and the individuals. It should equip the leaders with necessary knowledge, skills or abilities and attitudes to perform their job. The data exposed that most of the respondents did not possess required knowledge concerning to the potato production technology, especially in case of plant protection measures, application and use of manures and fertilizers, field preparation etc.

**Keywords:** Potato, IPM practices, Production, Knowledge.

### Introduction

Potatoes are the world's most important vegetable crop. They originated in the Andean region of South America and were first brought to Spain, where they were marketed as early as 1576. The potato was then introduced to the rest of Europe, where the Irish were the first to recognize it for its high food value. By the early 1600s potatoes became the staple food of the Irish, with the majority of the people depending on them for their existence. It is one of the major tuber crops of the world. It is a wholesome food and consumed by all sections of the people. It is also becoming an important source of rural employment and income for growing population. It produces 74.5 and 58 per cent more food energy and 54.0 and 77.6 per cent more protein per unit area than wheat and rice respectively. It is mainly grown by smallholder farmers in Asia, mostly under temperate climatic conditions in highland production areas.

Potato is a multipurpose food, consumed by more than one billion people in all over the world. It is a staple food in Europe and vegetable in the developing countries. In the world scenario there are one hundred fifty seven countries engaged in potato production. India is the second largest producer of potato in the world after China and both the countries put together contribute nearly one third of the global potato production. Potato is unique crop, which can supplement the food necessities of the world predominantly in the area of high human population density like Asia. As a crop it can yield up 40-50 tones/hectare.

Potato production has played a vital role in increasing vegetable production of the country with 25.6 per cent share in total vegetable production during 2002-03. The contribution of the country in world potato pool has increased from 6.4 per cent to 7.8 per cent during last decade. Potato utilization has become more diverse with processed products, commanding a large share of the potato market.

India in particular and Asia in general are showing rapid growth in potato production. Potato popularly known as "The king of vegetables", has emerged as fourth most important food crop in India after rice, wheat and maize. In world scenario, India produced 42.34 million tonnes from 1.86 million ha with an average yield of 22.72 tonnes/ ha of potato during 2010-11 (Agricultural statistics at a glance, 2012). Though, during the recent past the productivity of potato in India has registered perceptible increase, but can this level be sustained or enhanced in future, is a matter of concern today. Knowledge of the past trends in area, production and productivity will aid the planners in deciding the growth rates to be achieved in accordance with the planned targets. Besides these, trends in area, production and productivity provide basis for forecasting the future supply.

Pest control today is accomplished mainly by using chemical pesticides because of its quick and certain action. In vegetables, application of chemical insecticides is very intensive which

is clear from the fact that though only 2.6 per cent of cropped area falls under vegetables yet consume 13-14 per cent of the total pesticide use in India. Market based survey showed as high as 75 per cent vegetable samples are contaminated with pesticides (Singh *et al.* 2003) <sup>[1-6]</sup> as the vegetables are harvested at short intervals, chemical method of plant protection has become risky and hazardous. In these context Integrated Pest Management strategies, which generally rely primarily on biological defences against pests before chemically altering the environment, is best alternate option to sustain plant protection in vegetables. IPM not only helps in controlling pests ecologically but also is economical for the growers and ultimately in agribusiness.

The above literature discussed by different researchers to identify the actual IPM practices of potato growers by which production and productivity could be increased.

### Research Methodology

The present study entitled “Degree of relationship of potato

growers about knowledge of IPM practices” in Milkpur Block of Faizabad district (U.P.)” was undertaken during the agricultural years 2014-15. Out of 85 villages in Milkpur block of Faizabad district, 5 villages were selected randomly for this study. A complete list of all potato growers in the selected villages was prepared. A sample size of 100 respondents was selected from the list of potato growers through proportionate random sampling techniques and the author himself collected data with the help of semi structured and pre-tested interview schedule. Analysis was done with the use of percentage, mean, standard deviation and correlation coefficient to see the relationship between different variables with knowledge of IPM practices.

### Result and Discussion

The findings and inferences drawn in respect to the specific objectives of the study by using relevant statistical techniques. The findings of this study have been divided and discussed into following subhead.

**Table 1:** Knowledge extent of IPM about Potato crop cultivation

S. No.	Statement	Per cent	Ranks
1.	Do you know about the summer deep ploughing.	48	XI
2.	Do you know about the recommended seed rate.	76	III
	(a) 10qt/ha.	65	
	(b) 25qt/ha.	32	
	(c) 20qt/ha.	18	
3.	Do you know about the proper spacing.		I
	(a) 45cmX45cm	65	
	(b) 50cmX20cm	32	
	(c) 60cmX25cm	18	
4.	Do you know about the removal of previous crop residues.	45	XI
5.	Do you know about the crop rotation.	85	II
6.	Do you know about the mixes cropping.	25	XVI
7.	Do you know about the lies of the light and pheromonetrap.	66	V
8.	Do you know about the burning of previous crop residues for ratooncrop.	67	IV
9.	Do you know about the hand picking insect-pest.	61	VI
10.	Do you know about the pest monitoring.	59	VII
11.	Do you know about the use of bio-pesticides.		
	(a) Trichoderma	36	
	(b) Bacillus thuringiensis	33	
	(c) Pyrethrum/pyrethrins	16	
12.	Do you know about use of neem-based product.	53	VIII
13.	Do you know about the use of natural enemies.	23	XVII
14.	Do you know about the use of bio-agents.	15	XX
15.	Do you know about the use of bio-fertilizers.	35	XV
16.	Do you know about the use of resistant varieties	42	XII
	(a) KufriThenamalai(LB)	32	
	(b) KufriJyoti(wart disease)	39	
	(c) KufriPukhraj(early blight)	46	
17.	Do you know about the seed treatment.	21	XIX
18.	Do you know about the soil treatment.	50	IX
19.	Do you know about the use of the recommended dose of pesticides.	40	XIII
20.	Do you know about the pesticides application against different pest.	38	XIV
	Overall percentage	47.80	

It is obvious from the Table 1 That among all 20 agricultural practices of Potato growing the practices like know about, Proper spacing (87.00%) was rank at 1<sup>st</sup> as far as knowledge possessed by the respondents was concerned. The practice crop rotation rate rank at 2<sup>nd</sup> rank (85.00%), followed by Recommended seed at rank 3<sup>rd</sup> (76.00%), Crop residues for ratoon crop 4<sup>th</sup> (67.00%), Light and pheromones trap at rank

5<sup>th</sup> (66.00%), Hand picking insect pest at rank 6<sup>th</sup> (61.00%), Pest monitoring at rank 7<sup>th</sup> (59.00%), Neem based product at rank 8<sup>th</sup> (53.00%), Soil treatment at rank 9<sup>th</sup> (50.00%) and Summer deep ploughing regulators at rank 10<sup>th</sup> (48.00%), respectively. The overall knowledge index was calculated to be 47.80%. It can be calculated that the extent of knowledge about Scientific Potato growers seems to be satisfactory.

**Table 2:** Over all knowledge of respondents

S. No.	categories	Respondents	
		Number	Percentage
1.	Low (Up to 22)	21	21.00
2.	Medium (23-26)	74	74.00
3.	High (27 and Above )	5	5.00
Total		100	100.00
Mean=24.35, S.D.=2.17, Min.=14, Max=18			

The table 2 indicates that the knowledge under Potato growers, which focused that maximum respondents (74%) were observed in the medium category (23 to 26) followed by (21%) and 5% for low (up to 22) category and high (above to 27) category respectively. So, the majority of the respondents were found having medium category of the knowledge about Potato growers.

**Table 3:** Correlation coefficient (r) between different Independent variables and Knowledge

S. No.	Independent Variable	Correlation Coefficient
1	Age	-0.05461
2	Education	0.130204
3	Caste	0.153143
4	Type of family	0.26036**
5	Size of family	0.230249*
6	Size of land holding	0.454841**
7	Occupation	0.281514**
8	Annual income	0.197927*
9	Social participation	-0.09442
10	Material possession	0.497909**
11	Economic motivation	0.584253**
12	Extension contact	0.207869*
13	Risk orientation	0.382502**

\*Significant at 0.05% probability level

\*\* Significant at 0.01% probability level

Table-4 focuses that out of 13 variables studied, the variables i.e. Adoption of Integrated Pest Management (IPM) practices among potato growers, type of family, size of land holding, occupation, material possession, economic motivation and risk orientation was found highly significant and positively correlated with knowledge extent. The variable like size of family, annual income and extension contact were found significant and positively correlated. The variable like education and caste were found positively correlated

knowledge extent. The variable like age, and social participation were found negatively correlated knowledge extent. Those variables which showed the positive and significant relationship had direct influence over knowledge extent about of Integrated Pest Management (IPM) practices among potato growers. It meant that if the values of these variable increases, the knowledge extent of cultivation practices will also increase.

**Table 3:** Constraints faced by respondents in adoption of integrated pest management (IPM) practices among potato growers

N=100

S. No.	Constraints	Respondent		Rank order
		No.	%	
1.	Potato growers reported lack of knowledge about intercropping of trap crops as one of the major constraint.	45	45	VI
2.	The deep plugging make the soil more lose and in not economical was perceived as a constraint.	60	60	II
3.	Non-availability of improved seed at proper time	70	70	I
4.	Lack of technical knowledge about the use of bio-agent, about identification of beneficial insects etc.	55	55	IV
5.	Lack of knowledge about economic threshold level (ETL)	35	35	VII
6.	Non-availability and exorbitant prices of pesticides and its ineffectiveness against pest	56	56	III
7.	Lack of knowledge about use of pheromone trap	49	49	V
8.	Inadequacy of labors and high wage rate for undertaking the manual work like handpicking of eggs/larvae destruction of affected fruiting body	34	34	VIII

The above Table-3 reveals that out of tenth constrains in decision making process, the constraints Non-availability of improved seed at proper time (70%), The deep plugging make the soil more lose and in not economical was perceived as a constraint (60%), Non-availability and exorbitant prices of pesticides and its ineffectiveness against pest (56%), Lack of technical knowledge about the use of bio-agent, about identification of beneficial insects (55%), Lack of knowledge about use of pheromone trap (49%), lack of knowledge about intercropping of trap crops as one of the major constraint. (45%), Lack of knowledge about economic threshold level (ETL) (35%), Inadequacy of labours and high wage rate for undertaking the manual work like handpicking of eggs/larvae

destruction of affected fruiting body (34%).

Pandey (2005) stated in support of study that non-availability of export worthy stocks, greater interval demand and high ruling prices; unawareness about proper post-harvest practices and quality; price-fixing packing materials; inadequate transport facilities; non-availability of adequate storage and handling facilities at ports and lack of suitable vessels and in adequate market intelligence.

### Conclusion

It has been observe that most of the respondents did not possess required knowledge concerning to the potato production technology, especially in case of field preparation,

plant protection measures, application and use of manures and fertilizers etc. So, there is an urgent need to enhance the good communication and extension system and input service system to make the farmers aware about latest innovations. In accordance of study it may be conclude that education have positively correlated and highly significant with knowledge of IPM practices of potato growers. Researcher found that training meeting and group discussion and method demonstration has emerged as best methods of IPM practices hence, these methods may be mostly utilized by training organizers for the better understanding of the potato grower. There is a need of giving more information to the farmers about training institutes, organization along with their IPM practices schedules to fulfil the knowledge gap among them.

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