DOI: 10.15740/HAS/AU/12.3/323-327 *Agriculture Update*
Volume **12** | Issue 3 | August, 2017 | 323-327
Visit us : *www.researchjournal.co.in*
e ISSN-0976-6847

RESEARCH ARTICLE :

Training needs of potato growers in Sepahijala district of Tripura

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ARTICLE CHRONICLE :
Received :
10.04.2017;
Revised :
01.06.2017;
Accepted :
15.06.2017

SUMMARY : Potato (*Solanum tuberosum* L.) is the fourth most important food crop and the primary non-grain food commodity in the world. At present China is the biggest potato producer globally. Total potato produced from China and India accounts for one third production of the rest of world. India accounted for 45.57 million MT of potato from an area of 20.63 lakh ha in the year 2015-16 with an average productivity of 22.10 t/ha. The potato grows quickly and contains more energy and protein per unit area when compared to a cereal crop. Therefore, it plays a vital role in ensuring food security, which is a major concern for the country. In North Eastern region of India, the state of Assam leads in area and the state of Tripura leads in productivity of potato. Tripura having an area of 5.4 thousand hectare under potato cultivation has an average productivity of 17.80 tonnes/ha which is below the average national productivity of 22.10 tonnes/ha (NHRDF, 2016). A study was conducted in Sepahijala district of Tripura by randomly selecting two of its rural development blocks. The main objective of the study was to analyse the socio - economic and personal characteristics of the potato growers and assess their perceived training needs in context of improved potato cultivation and increase the productivity of the crop. Data analysis was done using SAS software. The findings revealed that majority of the farmers had training needs in the area of disease management followed by insect pest management and balanced use of manures and fertilizers. Correlation analysis revealed that variables age, education and knowledge had highly significant association with the variable "training needs" of the potato farmers. Variables age and knowledge were found important to explain training needs of the potato growers.

KEY WORDS :
Training needs,
Potato growers,
Correlates

How to cite this article : Das, Rajib and Jha, K.K. (2017). Training needs of potato growers in Sepahijala district of Tripura. *Agric. Update*, **12**(3): 323-327; **DOI : 10.15740/HAS/AU/12.3/323-327.**

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BACKGROUND AND OBJECTIVES

Potato (*Solanum tuberosum* L.) of Solanaceae family is one of the most important food crops of the world. It has become one of the most popular crops for vegetable purposes. Potato is considered as an economical food since, it provides a source of low cost energy to the human diet having rich source of starch and vitamins especially C and B_1 and minerals. It contains 20.6 per cent carbohydrates, 2.1 per cent protein, 0.3 per cent fat, 1.1 per cent crude fibre and 0.9 per cent ash on fresh weight basis. It also contain good amount of essential amino acids like leucine, tryptophane and isoleucine etc. (Suryawanshi *et al.*, 2016). Fresh potato

contains about 80 per cent water and 20 per cent dry matter of which 60- 80 per cent is starch. It has low fat content and high vitamin C. A single potato of 150 g can meet 100 mg of vitamin C requirement. Potato is also a good source of iron, vitamins B_1, B_3 and B_6 and minerals such as potassium, phosphorus and magnesium, and contains foliate, pantothenic acid and riboflavin. Potato also has dietary antioxidants, which can prevent diseases related to ageing, and contains dietary fibre, which benefits human health.

Potato is one of the most important crops in India. India is the second largest producer of potato after China. In 2005, for the first time, the developing world's potato production exceeded that of the developed world. At present China is the biggest potato producer, and almost one third of all potatoes harvested globally comes from China and India. In India 45.57 million metric tonnes (mMT) of potato production was obtained in the year 2015-16 from an area of 20.63 lakh hectare (ha) with an average productivity of 22.10 t/ha (NHRDF, 2016).

Potato is also an important crop in the North East region of India comprising the states of Assam, Arunachal Pradesh, Mizoram, Nagaland, Manipur, Meghalaya, Tripura and Sikkim. North East region covers almost nine per cent of the area of the country and about 4.50 per cent of its population. The state of Tripura has a total geographical area about 10492 sq km only. Potato is one of the important major commercial crops of Tripura. Among the north eastern states, Assam has the highest production of potato followed by Meghalaya and Tripura whereas, Tripura has the highest productivity 17.80 t/ha (NHB, 2015). Tripura having an area of 5.4 thousand hectare under potato cultivation has an average productivity of 17.80 tonnes/ha which is below the average national productivity (22.10 tonnes/ha). Low productivity in comparison to national level and low level of adoption of improved practices of potato cultivation motivated the researcher to undertake the present study.

RESOURCES AND METHODS

The present study was conducted in Sepahijala district, which was randomly selected out of the eight districts of Tripura. Further two rural development (RD) blocks *viz.*, Boxanagar and Kathalia were selected randomly under this district and one village was randomly selected from each of these two selected RD blocks. The selected villages included Bejimara from Kathalia RD block and Aralia from Boxanagar RD block, respectively. The list of all the potato growers in the selected villages was prepared and about fifteen per cent of them were selected randomly making a sample size of 130 potato growers. The study was under taken with following objectives:

– To study the socio economic and personal characteristics of the potato growers

– To assess the training needs of potato growers

Socio-economic characteristics of the potato cultivators were studied in terms of the variables age, sex, social class, educational level, family size, family type, size of land holding, information sources utilization and knowledge. Training needs were identified in eleven specified areas comprising land preparation, selection of suitable variety, seed treatment, irrigation requirement, use of manures and fertilizers, control of insects, control of diseases, post harvest management, use of improved farm implements, storage methods and making processed products.

Primary data were collected from the selected respondents with the help of a pre-tested structured schedule by personal interview method. Secondary data were collected from journals, online reports, published government records etc. Data analysis was done using SAS software for obtaining valid inferences.

OBSERVATIONS AND ANALYSIS

The results obtained from the present study as well as discussions have been summarized under following heads:

Socio- economic and personal characteristics of potato growers :

It was evident from the Table 1 that majority (70.77%) of the respondents were middle aged. The mean age was found to be 44.32 years. All (100%) of the respondents were male and majority (69.23%) belonged to the Muslims community. Most (41.54%) of the respondents had education upto high school having medium family size (69.23%) with nuclear family (76.15%). Most (88.46%) of the farmers had medium size of land holding with low level of information sources utilization as evident in case of 73.84 per cent of them and majority (66.15 %) had medium knowledge level of improved potato cultivation. These finding are in accordance with the findings of Wase (2001), Kafle and

Shah (2012) and Chavai *et al*. (2015).

Areas of training needs perceived by potato growers :

Table 2 revealed that majority (73.08%) of the farmers perceived the area of disease management as the most priority area of training needs followed by insect pest management as reported by 66.15 per cent of them and balanced use of manures and fertilizers as in case of 37.69 per cent of the potato growers. Due to disease and insect pest farmers suffered great loss and, therefore, they wanted specialised training in these areas.

The least training need was identified in land preparation (88.46%), followed by storage methods (86.92%) and making processed products (75.38%) from potato. This result is in accordance with the study of Bhagat and Khurana (1991) and Ganesan *et al.* (1992). Srivastava *et al.* (2012) found that the highest training need was felt as plant protection measures followed by manures and fertilizer application, and land preparation and planting, respectively.

Factors influencing training needs of the potato growers :

Table 3 revealed that the variables age, educational level and knowledge had negative and highly significant association with the variable "training needs" of the potato farmers. It was also found that the variable 'Sources of information utilization' had negative and significant association with "training needs". This implies that potato growing farmers young in age, having low level of education, low utilization of the various information sources for potato cultivation and possessing lower knowledge about the improved practices of potato

Table 1: Socio-economic and personal characteristics of potato growers **(n=130)**

Sr. No	Characteristics	Category/Level	Frequency	Percentage
1.	Age (in Yrs)	Old	22	16.92
	Mean =44.32	Middle aged	92	70.77
	Sd = 11.60	Young	16	12.31
2.	Sex	Male	130	100.00
		Female	00	00.00
3.	Social class	Muslims	90	69.23
		OBC	04	3.08
		General	01	0.77
		SC	35	26.92
4.	Educational level	Illiterate	17	13.08
		Primary level	18	13.84
		Middle school level	05	3.85
		High school level	54	41.54
		+2 and above	36	27.69
5.	Family size	Big	23	17.69
	Mean = 4.97	Medium	90	69.23
	Sd = 1.79	Small	17	13.08
6.	Family type	Joint	31	23.85
		Nuclear	99	76.15
7.	Land holding	Big	10	7.69
	Mean =4.57 Kani or	Medium	115	88.46
	0.731 ha	Small	05	3.85
8.	Information sources utilization	High	11	8.46
		Medium	96	73.84
		Low	23	17.69
9.	Knowledge	High	13	10.00
	Mean = 4.83	Medium	86	66.15
	Sd = 2.18	Low	31	23.85

cultivation had higher training needs in the identified areas of training with respect to potato cultivation. Similar relationship of 'training needs' of farmers with variable 'educational level' was reported by Singh and Gill (1982) and Mathiyazhagon and Singh (1986).

Multiple regression analysis of the predictor variables with training needs of potato growers :

Table 4 depicts 't' values of the regression co-efficient of predictor variables with the response variable training needs. The regression equation which included predictor variables *viz.*, age, education level, social class, family size, family type, information sources utilization, land holding size and knowledge, explained to the extent of 30.46 per cent of the variations in determining the training needs of the potato growers. The F value (6.62) was found to be highly significant.

The regression co-efficient of the variables education level, social class, family size, family type were found positive and non-significant whereas; regression co-efficient of the variables information sources utilization and land holding size were found negative and non-

Table 2 : Categorisation of farmers based on their perceived training needs **(n=130)**

Sr. No.	Training need areas	Most needed	Needed	Not needed
1.	Land preparation	0.00	15(11.54%)	115(88.46%)
2.	Selection of variety	08(6.15%)	30(23.08%)	92(70.77%)
3.	Seed treatment	09(6.92%)	48(36.93%)	73(56.15%)
4.	Irrigation requirements	15(11.54%)	73(56.15%)	42(32.31%)
5.	Use of manures and fertilizers	49(37.69%)	71(54.62%)	10(7.69%)
6.	Control of insects	86(66.15%)	42(32.31%)	02(1.54%)
7.	Control of diseases	95(73.08%)	31(23.85%)	04(3.07%)
8.	Post harvest management	27(20.77%)	31(23.85%)	72(55.38%)
9.	Use of improved farm implements	06(4.61%)	39(30.00%)	85(65.39%)
10.	Storage methods	03(2.31%)	14(10.77%)	113(86.92%)
11.	Processed products	04(3.08%)	28(21.54%)	98(75.38%)

Table 3 : Association of independent variables with "training needs" of potato growers

Sr. No.	Independent variables	Co-efficient of correlation (r)
1.	Age	-0.3814**
2.	Education level	-0.2533**
3.	Social class	0.1163^{NS}
4.	Family size	0.1261^{NS}
5.	Family type	0.0818^{NS}
6.	Information sources utilization	-0.1895*
7.	Land holding size	0.0394^{NS}
8.	Knowledge	-0.4310**

* and ** indicate significance of values at P=0.05 α and 0.01α, respectively NS=Non-significant

Table 4 : Multiple regression analysis of the predictor variables with training needs of potato growers

Sr. No.	Predictor variables	b	SE (b)	t Values
1.	Age (X_1)	-0.09466**	0.03170	-2.99
2.	Education level (X_2)	0.04459^{NS}	0.24450	0.18
3.	Social class(X_3)	0.08700^{NS}	0.48125	0.18
4.	Family size(X_4)	0.02104^{NS}	0.19473	0.11
5.	Family type(X_5)	0.95361^{NS}	0.81796	1.17
6.	Information sources utilization(X_6)	-0.14224^{NS}	0.25921	-0.55
7.	Land holding size(X_7)	-0.01230^{NS}	0.10380	-0.12
8.	Knowledge(X_8)	-0.67834**	0.13781	-4.92

a = 14.1168; R^2= 0.3046; F value= 6.62

** indicates significance of value at P=0.01α; NS=Non-significant

significant. The regression co-efficient of the predictor variables age (-0.09466) and knowledge (-0.67834) was found to be negative and highly significant sowing an inverse relationship with the response variable. Thus, it may be inferred that the variables age and knowledge which are found highly significant are important for explaining the variations in training needs of the potato growers.

Conclusion :

It may be concluded from the present study that majority of the potato growers were middle aged, had education upto high school level with nuclear family and medium size of family. Most of them had medium size of land holding, medium level of information sources utilization and knowledge level about improved potato cultivation. Majority of the potato growers perceived training needs in the area of diseases management followed by insect pest management and balanced use of manures and fertilizers. The variables age and knowledge were found important in explaining the variations in training needs of the potato growers. Therefore, training programmes may be organized to include more number of young farmers and improve the existing knowledge of farmers in relation to adoption of disease and pest management practices as well as balanced use of manures and fertilizers for achieving higher productivity and profitability in potato cultivation.

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