International Journal of Chemical Studies

P-ISSN: 2349–8528
E-ISSN: 2321–4902
IJCS 2019; SP6: 447-451

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(Special Issue -6)
3rd National Conference
On
PROMOTING & REINVIGORATING AGRI-HORTI, TECHNOLOGICAL INNOVATIONS [PRAGATI-2019]
(14-15 December, 2019)

Training needs assessment of tomato growers of Bhagalpur district of Bihar

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Abstract
The present study was undertaken in Bhagalpur district of Bihar to examine training needs of tomato grower's in various areas of improved tomato cultivation technology. Attempt was also made to know the associations of selected socio-economic and psychological Variables with the level of knowledge. The study was conducted by purposively selecting Naugachia block of Bhagalpur district. 120 tomato growers were selected from two villages randomly with through use of structured interview schedule. Findings indicate that as high as 62.05 percent knowledge gap existed among the farming community in relation to the improved tomato cultivation technology. Analysis of data related with knowledge gap in different sub – areas of main areas indicated a knowledge gap ranging from 39.72 percent to 76.76 percent.

Keywords: Knowledge gap, Training need, Tomato growers

Introduction
Training is a process of acquisition of new skills, attitude and knowledge in the context of preparing for entry into a vocation or improving one's productivity in an organization or enterprise. Effective training requires a clear picture of how the trainees will need to use information after training in place of local practices what they have adopted before in their situation. Training does not mean knowing more but behaving differently.

Tomato is one of the most important "protective food" both because of its special nutritive value and also because of its wide spread production. Tomato is one of the most important vegetable crops cultivated for its fleshy fruit tomato is considered as important commercial and dietary vegetable crop. Tomato is protective supplementary food. As it is a short duration crop and gives high yield, it is important from economic point of view and hence area under its cultivation is increasing day by day. Tomato is used in products like ketchup, sauce, chutney, soup, paste, puree etc.

Vegetables play an important role in human health and nutrition in addition to their role in nutrition vegetables increase attractiveness and palatability of a diet by providing sensory appeal through their variety of colours and flavours. They provide protection against many diseases. They also play key role in neutralizing the acids produced during digestion of proteinous and fatty foods and also provide valuable roughages which promote digestion and help in preventing constipation. Tomato is one of the major vegetable crops. It plays a very important role in daily diet. Tomato in India has become almost an essential article of diet of both rich and poor people. Tomato is rich sources of vitamins A, B and C. it helps in increasing the appetite and removes constipation. Tomato is very good appetizer and its soup to a good friend for patient suffering from constipation. It is a rich source of mineral organic

acid (healthy acids). India is the second largest producer of vegetables in the world, next to china. The vegetables were grown in about 7980.7 thousand hectares cultivated area in the year 2008-2009. The annual production was 129076.8 thousandmetric tonnes. The area under tomato crop was 599 thousand hectares withthe production of 11149 thousand metric tonnes in India in the year 2008-2009 (source: - National horticulture Board, data base -2008-2009). Though thevegetable requirement is 300 grams per day per capita but it was reported to be less than 225 grams per capita per day. (Source – 'vegetables for health and nutation security" yojana April-2002).

Materials and methods

The study was conducted in Bhagalpur district of Bihar. Four blocks of Bhagalpur district namely Sabour, Kahalgaon, Pirpainti and Naugachia were selected for the study. Thirty farmers from each block were selected randomly hence total 120 resondents were selected for the study.

Further, the knowledge gap index for each respondent was calculated in terms of percentage as per the formula given below. Knowledge gap index = potential – extent / potential X 100. The results were analyzed and interpreted highlighting the knowledge gap in improved tomato cultivation technology.

Results and Discussion

Knowledge of cultivation technology is affected by various socio - economic, personal, and psychological and communication factors of the farmers. Therefore, an attempt has been made to explore relationship between the socio – economic, psychological and communicational variables and the level of knowledge of improved tomato cultivation technology.

Knowledge gap in the main areas of improved Tomato cultivations technology

The gap in the knowledge of the total farmers in relation to the main areas of improved tomato cultivation technology is presented in Table-1 revealed maximum knowledge gap to the tune of 77.73 percent in the area of plant protection measures. Therefore, first priority needs to be given in this area of tomato cultivation technology while organizing farmers training on this crop (Kubde *et al*., 2000) [4]. Fertilizer management were the second major problem in which the knowledge gap was as high 65.36 percent. In other four areas such as post harvest technology, crop management, irrigation management and pre – planting technique, the knowledge gap was observed between 63-52 percent. Hence, it may be concluded that a vast knowledge gap starting from 77.73 percent to 52.25 percent existed among the farming community of the area in relation to the improved tomato cultivation technology.

Thus, it can he said that farmer have very little knowledge about cultivation of tomato with improved technology. Most crucial areas in which the farmers possessed much lower knowledge than expected were the plant protection as the knowledge gap in this area was highest.

Table 1: Knowledge gap in the main areas of improved Tomato cultivations technology

Sl.	Main areas	Knowledge possessed (%)	Knowledge gap (%)
1	Preplanting technique	43.17	56.83
2	Fertilizer management	34.64	65.36
3	Crop management	42.96	57.04
4	Irrigations management	47.75	52.25
5	Plant protections measures	22.27	77.73
6	Post harvest technology	36.89	63.11
Mean		37.94	62.05

Knowledge gap in the sub area of pre – plating technique

Table 2. Showed that 45-58 percent knowledge gap existed in the various sub – areas of the pre – planting technique of the improved tomato cultivation. In the sub – areas of manuring knowledge gap was highest that is 58.21 percent whereas the minimum knowledge gap (45.41 percent) was found in the sub areas of type of land required. About 50 percent of the farmers were not aware of the knowledge of the time of tomato plantation. Knowledge gap in the sub areas of selection of variety for dwarf and long of tomato came to be 51.79 percent. The minimum knowledge gap was observed in the sub areas of depth and diameter of tomato pit. It was to the tune of 47.57 percent.

Table 2: Knowledge gap in the Sub-areas of pre-planting techniques

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1	Type of land required	54.59	45.41
2	Time of plantation	50.11	49.89
3	Tomato pit	52.43	47.57
4	Mannuring	41.79	58.21
5	Selection of variety	48.21	51.79

Knowledge gap in the sub areas of fertilizer management.

From table 3. It is clear that in the case of fertilizer management, the knowledge gap was observed to be in the sub-area of use of potasic fertilizers. The farmers showed 72.81 percent knowledge gap in the sub-areas such as the quantity and time of the use of potasic fertilizers concerning the quantity and time of the use of phosphatic fertilizer, the knowledge gap was 62.16 percent and in the case of quantity and time of use of nitrogenous fertilizer the knowledge gap was minimum to the tune of 58.09 percent.

Table 3: Knowledge gap in the Sub-areas of Fertilizer management

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1	Nitrogen (quantity + time)	41.91	58.09
2	Phosphorus (quantity + time)	37.84	62.16
3	Potash (quantity + time)	27.19	72.81

The finding that the minimum knowledge gap was in the quantity and time of use of nitrogenous fertilizer, suggests that the farmers had better knowledge of the dose and time of use of nitrogenous fertilizer in Tomato cultivation as

compared to the management of other two chemical fertilizers.

Knowledge gap in the sub areas of crop management

The table-4, Reveals that most of the farmers did not know the distance between row to row and plant to plant of the planting tomato.

Table 4: Knowledge gap in the Sub-areas of crop management

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1	Plant spacing (R to R +P to P)	30.96	69.04
2	Interculture weeding (No. + Time + name of weedicide)	43.63	56.37
3	Desuckering	60.28	39.72

The farmers were having relatively better knowledge in the number and time of desuckering in this sub – area of crop management and that was 39.72 percent. The sub – area of inter – culture, which included the number and time of weeding and the chemical name of the weedicide, exhibited a knowledge gap of 56.37 percents.

Knowledge gap in the sub - areas of irrigation management

The data in respect to the knowledge gap in the areas of irrigation management are presented in Table 5. The maximum gap was observed in the sub – areas of identification of the number of irrigation. It was 58.12 percent in the case of tomato farmers. This was followed by 56.55 percent and 41.99 percent in the sub – areas of critical stage and day's interval between the two irrigation.

Table 5: Knowledge gap in the Sub-areas of irrigation management

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1	No. of irrigation required	41.88	58.12
2	Days interval	58.01	41.99
3	Critical Stage	43.45	56.55

It is important to mention that in the study area, pumping set it the only source of irrigation in the absence of a canal or any other government funded irrigation source. Realizing their present state of economic conditions, the farmers are seemingly not taking interest in possession of scientific knowledge of irrigation management in relation to the tomato cultivation because simple acquisition of knowledge is not going to pay the farming community unless the same in translated into action. However, it the use of a technology is not supposed to give a significant result as compared to the investment in it, particularly when the technology is costly one, it is logical that the farmers, specially the farmers with limited resources, will hesitate for using that technology.

Knowledge gap in the sub - areas of Plant protection measure

Table 6: Knowledge gap in the Sub-areas of Plant protection measure

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1	Viral diseases (symptom + control measures)	23.24	76.76
2	Disease caused by bacterial / insects (Symptom + control measure)	26.87	73.13

The knowledge gap in the sub-areas of identification of the diseases caused by virus along with their control measures was slightly higher i.e. 77.76 percent. Similarly the gap in the knowledge in the sub-area of disease caused by bacteria was about 73.13 percent. This indicated that the farmers were not having better knowledge of the control measures of disease caused by virus and bacteria.

Knowledge gap in the sub - areas of post harvest technology

The post harvest technology included two important sub-areas (i) time of harvest (ii) curing of bunch. The data related to knowledge gap in these two sub-areas of post harvest technology is presented in Table 7.

Table 7: Knowledge gap in the Sub-areas of post harvest technology

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1	Harvesting time	36.17	63.83
2	Curing of bunch	42.13	57.87

The table revealed that the knowledge gap in the sub – area of harvesting time was to the tune of 63.83 percent. Similarly, the gap in the knowledge in the sub-area of curing of bunch was about 57.87 percent. The study indicated that the vast gap exists in between knowledge possessed by the farmers and the knowledge should have been among the farmers in relation to the post – harvest technology of tomato crop.

Problem in Tomato cultivation as perceived by the farmers

Know the Various problems associated with the cultivation of tomato as perceived by the farmers. The data are presented in Table 8.

Table 8: Constraints perceived by tomato growers

Sl. No	Constraints				
A	**Technological Constraints**	**Frequency**	**Percentage**	**Rank**	**Over all Rank**
1	Susceptibility of plant disease like leaf spot	102	85.00	I	II
2	Incidence of insect/pest attack	92	76.66	II	VI
3	Poor yield due to nutrient deficiency in the soil	53	44.16	III	IX
4	Non-availability of suitable improved variety	29	24.16	V	XI
5	Failure in fruit formation due to unfavorable weather conditions	31	25.83	IV	X
B Socio personal Constraints					
1	Lack of knowledge about tomato production technology	97	60.62	II	V
2	Lack of contact with Agricultural Scientist, BAO and VLWs	100	83.33	I	IV
3	Poverty of respondent	89	74.16	III	VIII
C Economic Constraints					
1	Low profit due to high cost of cultivation	105	87.50	I	I
2	High price of chemicals for plant protection	101	84.16	II	III
3	High price of manure and fertilizers	92	76.66	III	VII

It is clear from the table the main problems that the tomato growers perceived were low profit due to high cost of cultivation (87.50%) and susceptibility of plant to disease like tomato wilt (85.00%). However, only 24.16 percent felt non-availability of suitable improved variety and 25.83 percent felt as failure in fruit formation due to unfavorable weather conditions. Suggests that intensive programme of training and demonstration should be conducted in the area to up-date and renew knowledge about tomato production technology.

Conclusions

The study revealed knowledge gap of tomato grower's. Maximum knowledge gap in relation to the improved tomato cultivation technology was observed in the area of plant protection measures (77.73 per cent) followed by fertilizer management (65.36 percent). Similarly, the minimum knowledge gap was found in the area of pre – planting technology (39.72 %)

The analysis of the data related to the knowledge gap in the area of pre – planting technique the knowledge gap in the different components existed in between 45.41 percent to 58.21 percent percent. In the area fertilizer management, the gap in the knowledge in different components was observed in between 58.09 percent to 72.81 percent. In the different components of the crop management, this gap found in between 39.72 percent to 69.04 percent. Similarly, in the area of irrigation management the knowledge gap ranged in between 41.99 percent to 58.12 percent in various components. So for as the gap in the knowledge of various components of plant protection measure was concerned, it existed in between 73.13 percent to 77.76 percent. Finally in the main area of post harvest technology, this knowledge gap was observed in between 57.87 percent to 63.83 percent in the different components.

The high knowledge gap in all the areas of improved tomato Cultivation technology depicts the poor extension effort being made to transfer the technology among the farmers. Hence, efforts should be made for widespread diffusion of the improved tomato cultivation technology. This will not only help the tomato growers to earn more profit by way at using the improved tomato cultivation technology, but will also help bringing more and more farmers under the tomato cultivations. Further, while organizing training for tomato growers not only the knowledge gap index should be taken into consideration but the farmer's perceived need should be taken care of.

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