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ASSESSMENT OF KNOWLEDGE GAP AND CONSTRAINTS OF LITCHI GROWERS IN BHAGALPUR DISTRICT OF BIHAR

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ABSTRACT

The current study was to examine the knowledge gap of Litchi growers in Bhagalpur district of Bihar. In Bihar, banana is the third most important fruit crop after mango and Banana is mostly grown in Bihar. In the tract around of Bhagalpur district, Litchi cultivation is commercially cultivated compared to cereals and other plantation crops. Agro climatic situation of Bhagalpur district is well suited for Litchi cultivation and possesses abundant scope for extension of area under this fruit. The study was conducted with 95 Litchi growers in Naugachia block of Bhagalpur. The results revealed that 74.84 percent of the respondent expressed knowledge gap in improved Litchi cultivation technology. Analysis of data related with knowledge gap in different sub–areas of main areas indicated a knowledge gap ranging from 40 percent to 73 percent.

Key words : *Knowledge gap, training need, litchi growers.*

Litchi (*Litchi chinensis*) is a delicious juicy fruit of excellent quality. Botanically it belongs to Sapindaceae family. The translucent, flavoured aril or edible flesh of the litchi is popular as a table fruit in India, while in China and Japan it is preferred in dried or canned state. In India, Litchi is grown in almost 83 thousand hectares of area with a production of 5.75 lakh metric tonnes. Bihar, West Bengal, Uttar Pradesh, Jharkhand, Uttarakhand are the major litchi growing states of the country. India is the second largest producer of litchi in the World after China. Other major producing countries are Thailand, Australia, South Africa, Madagascar and Florida in US. Among fruit crops, litchi ranks seventh in area and ninth in production but is sixth in terms of value in India. The national average productivity of litchi is 6.1 t/ha, which is much lower than the realizable yield of the crop under well managed condition. The average productivity of litchi in Bihar is 8.0 tonnes/ha. and in West Bengal it is 10.5 tonnes/ha. In other states the productivity is much lower, the lowest of 1.0 t / ha in Uttaranchal. At present, India is the second largest producer of Litchi in the world (Kumar, 2006). In Bihar, banana is the third most important fruit crop after mango and Banana. Agro climatic situation of Bhagalpur district is well suited for Litchi cultivation and possesses abundant scope for area expansion. The production and productivity is much lower in the state as compared to other states like West Bengal and Punjab. Further, the training need index for each respondent was calculated to asses knowledge gap and training need (Sreedaya *et al.,* 2000).

The main reason for the low production and productivity seems to be the lack of scientific knowledge of Litchi production technology. Barma and Pathak (2005) reported that, the majority of the farmers did not have adequate knowledge on production recommendation and that more than half of the production recommendations were not known to them. Sufficient research has been conducted by Rajendra Prasad Agricultural University through its allied and constituent centers on the basis of which the production technology of Litchi has been standardized but it seems that the farmers of this state are by and large unaware of latest production technology of Litchi. Litchi is considered as the most important energy provider and is a good source of mineral and vitamins. Litchi produce more balanced diet than many fruits. Litchi play a key role in the economy and food security of India (Yojana April, 2006).

Objectives formed in this study were, (1) To know the extent of knowledge gap in various components of Litchi production technology, and (2) To determine the constraints being noticed by the Litchi growers as perceived by them.

RESEARCH METHODOLOGY

The study was conducted in Bhagalpur district of Bihar. Bhagalpur district was purposively selected as area of Litchi is high compared to other districts. Among 15 blocks, Naugachia block having the highest acreage under Litchi cultivation was purposively selected as locale of research. Two Litchi growing villages having the largest area under Litchi cultivation were selected. Stratified random sampling procedure was adopted to select the respondents and 95 respondent farmers from each strata were selected by random sampling procedure.

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 Litchi 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 was made to explore relationship between the socio – economic, psychological and communicational variables and the level of knowledge of improved banana cultivation technology.

Table-1 : Knowledge gap in the main areas of improved Litchi cultivations technology.

Sl.	Main areas	Knowledge possessed (%)	Knowledge gap (%)
1.	Pre-planting technique	48.15	51.85
2.	Fertilizer management	33.83	66.17
3.	Crop management	41.92	58.08
4.	Irrigations management	45.05	54.95
5.	Plant protections measures	22.16	77.84
6.	Post-harvest technology	36.78	63.68
	Mean	38.32	61.68

Knowledge gap in the main areas of improved Litchi cultivations technology : The gap in the knowledge of the total farmers in relation to improved Litchi cultivation technology is presented in Table-1.

Results of Table-1, reveals that maximum knowledge gap was identified as much as 77.84 percent of the respondent reported to have lack of knowledge in the area of plant protection measures. Therefore, first priority was given to plant protection measures in Litchi cultivation technology. Nutrient management was the second major problem identified from the respondents.

Existence of knowledge gap in nutrient management was identified from 66.17 percent of the respondents. In other four areas such as post harvest technology, crop management, irrigation management and pre–planting technique, the knowledge gap was observed between 63.51 percent. Overall, knowledge gap in improved Litchi cultivation technology varied from77.84 percent to 51.85 percent among the respondents of Naugachia block of Bhagalpur district.

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

Sl.	Sub-areas	Knowledge possessed (%)	Knowledge gap (%)
1.	Type of land required	51.00	49.00
2.	Time of plantation	49.16	50.84
3.	Litchi pit	51.52	48.48
4.	Mannuring	38.83	61.17
5.	Selection of variety	45.24	54.76

Knowledge gap in the sub area of pre–plating technique : The knowledge gap in sub areas of pre-planting techniques were assessed and tabulated in Table-2.

Results of Table-2 reveal that, overall 48-61 percent knowledge gap existed in the various sub–areas of the pre–planting technique. Among them, 61.17 percent was maximum and 48.48 per cent was minimum knowledge gap identified. About 50.84 percent of the farmers were not aware of the knowledge of the time of banana plantation. Knowledge gap in the sub areas of selection of variety of Litchi came to be 54.76 percent. The minimum knowledge gap was observed in the sub areas of depth and diameter of Litchi pit. It was to the tune of 48.48 percent.

Knowledge gap in the sub areas of fertilizer management : The knowledge gap was observed to be in the sub-area of use of potasic fertilizers as per Table-3. The farmers showed 77.34 percent

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

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1.	Nitrogen (quantity + time)	41.50	58.50
2.	Phosphorus (quantity + time)	35.33	64.67
3.	Potash (quantity + time)	22.66	77.34

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 phosphate fertilizer, the knowledge gap was 64.67 percent and in the case of quantity and time of use of nitrogenous fertilizer the knowledge gap was minimum to the tune of 58.50 percent.

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 Litchi cultivation as compared to the management of other two chemical fertilizers.

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-4. The maximum gap was observed in the sub–areas of identification of the number of irrigation. It was 57.67 percent in the case of Litchi farmers. This was followed by 55.68 percent and 52.50 percent in the sub–areas of critical stage and day's interval between the two irrigation.

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

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1.	No. of irrigation required	40.33	59.67
2.	Days interval	55.50	44.50
3.	Critical Stage	42.32	57.68

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 Litchi 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 : The knowledge gap in sub areas of plant protection measure were assessed and tabulated in Table-5.

Table-5 : Knowledge gap in the Sub-areas of Plant protection measure.

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1.	Viral diseases (symptom + control measures)	21.34	78.66
2.	Disease caused by bacterial / insects (Symptom + control measure)	22.98	77.02

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. 78.66 percent. Similarly the gap in the knowledge in the sub-area of disease caused by bacteria was about 77 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-6.

Table-6 : Knowledge gap in the Sub-areas of post harvest technology.

Sl.	Sub areas	Knowledge possessed (%)	Knowledge gap (%)
1.	Harvesting time	31.83	68.17
2.	Curing of bunch	41.73	58.27

The table revealed that the knowledge gap in the sub–area of harvesting time was to the tune of 68.17 percent. Similarly, the gap in the knowledge in the sub-area of curing of bunch was about 58.27 percent. The study indicated that the vast gap exists in between knowledge possessed by the farmers and the

Table-7 : Constraints perceived by Litchi growers.

Sl. No	Constraints				
A	**Technological Constraints**	**Frequency**	**Percentage**	**Rank**	**Over all Rank**
1.	Susceptibility of plant disease	80	84.13	I	II
2.	Incidence of insect/pest attack	72	75.89	II	VI
3.	Poor yield due to nutrient deficiency in the soil	39	41.15	III	IX
4.	Non-availability of suitable improved variety	21	22.21	V	XI
5.	Failure in fruit formation due to unfavorable weather conditions	23	24.31	IV	X
B	**Socio personal Constraints**				
1.	Lack of knowledge about banana production technology	74	78.00	II	V
2.	Lack of contact with Agricultural Scientist, BAO and VLWs	77	81.15	I	IV
3.	Poverty of respondent	69	72.73	III	VIII
C	**Economic Constraints**				
1.	Low profit due to high cost of cultivation	83	86.47	I	I
2.	High price of chemicals for plant protection	79	83.26	II	III
3.	High price of manure and fertilizers	71	74.84	III	VII

knowledge should have been among the farmers in relation to the post-harvest technology of Litchi crop.

Problem in Litchi cultivation as perceived by the farmers : Know the Various problems associated with the cultivation of Litchi as perceived by the farmers. The data are presented in Table-7.

It is clear from the table the main problems that the Litchi growers perceived were low profit due to high cost of cultivation (86.47%) and susceptibility of plant to disease like banana wilt (84.13%). However, only 22.21 percent felt non- availability of suitable improved variety and 24.31 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 Litchi production technology.

CONCLUSION

The study revealed knowledge gap of Litchi grower's. Maximum knowledge gap in relation to the improved Litchi cultivation technology was observed in the area of plant protection measures. Followed by fertilizer management (64.17 percent). Similarly, the minimum knowledge gap was found in the area of pre – planting technology (69.84%).

The analysis of the data related to the knowledge gap in different sub – areas of the main areas indicated a knowledge gap ranging from 48 percent to 77 percent. In the area of pre–planting technique the knowledge gap in the different components existed in between 43 percent to 61.17 percent. In the area fertilizer management, the gap in the knowledge in different components was observed in between 55.50 percent to 75.34 percent. In the different components of the crop management, this gap found in between 38.90 percent to 69.50 percent. Similarly, in the area of irrigation management the knowledge gap ranged in between 50.50 percent to 59.67 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 73.66 percent to 76.02 percent. Finally in the main area of post harvest technology, this knowledge gap was observed in between 54.27 percent to 66.17 percent in the different components.

The high knowledge gap in all the areas of improved Litchi 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 banana cultivation technology. This will not only help the Litchi

growers to earn more profit by way at using the improved Litchi cultivation technology, but will also help bringing more and more farmers under the Litchi cultivations. Further, while organizing training for Litchi 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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