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ANALYSIS OF FARMERS' KNOWLEDGE AND ATTITUDE TOWARDS LAC CULTIVATION IN BANGLADESH

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Abstract

The study was a descriptive survey, which was undertaken to describe the lac grower's knowledge and attitude towards lac cultivation. The study was conducted at two lac growing area of Naogan and Chapainawabganj district. Sixty lac farmers were selected randomly from selected area and considered as sample of the study. The interview schedule was developed according to the objective of the study. The farmer's knowledge on lac cultivation was calculated by answering 10 questions related to lac cultivation. Five point likertscale was employed to judge 15 attitude measuring statements towards lac cultivation. The highest proportion (36.67%) of the respondent was in 50%and above knowledge category but no respondent was found at 80% and above knowledge category. Maximum (86.67%) respondents possessed moderately to highly favourable attitude towards lac cultivation where only13.33% possessed less favourable attitude. Among the socio demographic characteristics**,** training exposure showed significant positive relationship with farmer's knowledge and attitude where education showed significant positive relationship with farmer's knowledge. Different need based lac cultivation related training to farmer can play vital role for development and popularization of lac cultivation.

Keywords: Lac cultivation, farmer's knowledge, farmer's attitude, assessment, lac growing area.

Introduction

Lac is the resinous substance secreted as a protective coating by the tiny lac insect, *Kerrialacca* (Kerr). It is one of the most valuable gifts of nature to manwhich is found as parasite on a number of both wild and cultivated plants (Anon., 1972). Lac is a complex mixture of resinous substances. Faruq *et al.* (1990) considered it as unparallel to any synthetic resin due to its unique combination of chemical, mechanical, thermal and electrical properties. Very small red coloured nymphs of the lac insect settle on the young succulent shoots of the host plants and suck the plant sap till the completion of their life cycle and death. Female lac insects secret a thick resinous fluid which covers their bodies.

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The secretion from the individual insect coalesces to form a hard continuous encrustation over the infested twigs of the host plants (Sengupta, 1972).

Lac insects can be cultured over a fairly wide range of the tropics and sub-tropics and on a large number of host trees (Anon, 1995). About 70% lac of the world is produced in India and they capture the highest position in the production and export of raw lac and lac products at the world market. Thailand is the second largest lac exporter after India with about 35% of the world market (Chuntanaparb, 1985). Lac has been cultivated in about three hundred hectares of land annually in Bangladesh from which is provide 180 tons of crude lac (Alam and Sarker, 2000). It has been reported that currently national production of lac is around 700 tonnes per year while the demand is estimated of about 15 times of that quantity (Mustafa, 2002).

Lac is cultivated in Bangladesh at Rajshahi division from many years (North-west part of Bangladesh). It was very popular and profitable crop at Rajshahi, Chapainawabganj and Naogaon district. Available host plants of Chapainawabganj district, has the capacity to produce 500 tons of raw lac which has a market value of Tk.40000000 and can provide job facilities to 20,000 landless and marginal farmers (Sarker *et al.*,2014).Though the lac cultivation and its marketing aspect have a tremendous prospect on the socio-economic development of the rural poor people of the country, but gradually then umber of families involved in lac growing activities are decreased with time which is very much alarming (Ferdousee *et al*., 2010). Several difficulties may be involves behind the present situation of lac cultivation. The research work is also very scanty to identify the present problem of lac production in Bangladesh. In this situation lac farmer's knowledge and attitude assessment study will help to identify the socio-economic and technical problem of lac cultivation. The present study will also help to develop exact policy for improved lac production. Therefore, the present study has been designed to evaluate lac grower's knowledge and attitude towards lac cultivation.

Methodology

The study was a descriptive survey, so an interview schedule was used to describe the lac grower's knowledge and attitude towards lac cultivation. Two Unionsnamely Kasba from Nachole Upazila of Chapainawabganj district and Niamatpur from Niamatpur Upazila of Naogaon district were selected as the study area on the basis of availability of the villages and respondents involved in lac cultivation. There was no exact information about the number and location of lac farmer at selected area. So for reducing time and cost thirty lac farmers were selected randomly from each of the selected Union and total sixty farmers was considered as the sample of the study.

The interview schedule was divided into two parts: (a) personal and professional characteristics of the farmers and (b) their viewpoint (knowledge, attitude)

towards lac cultivation and at this part 10 knowledge measuring questions and 15 attitude measuring statements were employed. Five points Likert scale was used to judge the attitude towards lac cultivation. Data were collected from the selected farmers by face to face interview method.

Measurement of dependent variable

The farmer's knowledge and attitude towards modern lac cultivation were the dependent variable of this study. The farmer's knowledge on lac cultivation was calculated by answering 10 questions aboutlac cultivation. The assigned score against each correct, partially correct and incorrect answer was 2, 1, and 0, respectively. Thus, one's Knowledge on lac cultivations cores could ranged from 0 to 20, where '0' indicating 'no knowledge and '20' indicating very high knowledge'. Based on knowledge score, the respondents were classified into the following categories.

Farmer's Categories	Knowledge Score
80% and above having correct knowledge on lac cultivation	16 and above
70% and above havingcorrectknowledgeon lac cultivation	14 and above
60% and above havingcorrectknowledge on lac cultivation	12 and above
50% and abovehavingcorrectknowledge on lac cultivation	10 and above
40% and above havingcorrect knowledge onlac cultivation	8 and above
less than 40% havingcorrect knowledgeon lac cultivation	less than 8

Meanwhile, fifteen opinion statements were administered for judging the farmers attitude towards lac cultivation.The farmers were asked to indicate the extent of their agreement on each of the 15 statement utilizing a Likert-type fivepoints scale like strongly agree, agree, undecided, disagree and strongly disagree with assigned scores of 5, 4, 3, 2 and 1, for positive statements, respectively and vice versa for negative statements. By adding together the assigned scores of 15 statements of a respondent, the attitude of a farmer towards lac cultivation was measured and categorized into the following three categoriesbased onmean and standard deviation score.Hasan*et al.*(2015)also classified farmer's attitude into three categories.

Categories	Score
Less favourable attitude	Up to50
Moderately favourable attitude	51 to 60
Highly favourable attitude	over 60

The attitude measuring statements score and rank were calculated by adding individual statements score from total 60 interview schedulefollowing Hasan*et al.*, 2015.

Measurement of independent variables

There were four independent variables of thestudy and those were farmer's age, level of education, family annual income, and training experience on lac cultivation. Age of a respondent was measured by counting the years from the time of his/her birth to the time of interview. The level of education was measured by the number of years of schooling. Family annual income of a respondent was determined on the basis of his total earnings from agriculture, service, business, and other sources. Training experience on lac cultivation was measured by respondent's training experience on lac cultivation in his entire life from different organizations. The assigned score for having training experience is 1 and for not having training experience is 0.

Statistical Analysis

Statistical Package for Social Science (SPSS) version 21 was used for analysing the data of this study. To achieve the objectives of the study the mean, standard deviation were calculated and different categories were used for classifying the data. Different statistical tests like frequency count, percentage, mean, standard deviation were applied to analyse and interpret the data based on the purpose of the study. The degree of relationship between dependent and independent variables were determined by calculating the Coefficient of Correlation (r).

Results and discussion

Knowledge on lac cultivation

Knowledge scores on lac cultivationof the respondent ranged from 7 to 14, with an average was 10.5. The respondents based on their knowledge scores on lac cultivation were classified into six categories as shown in Figure 1.

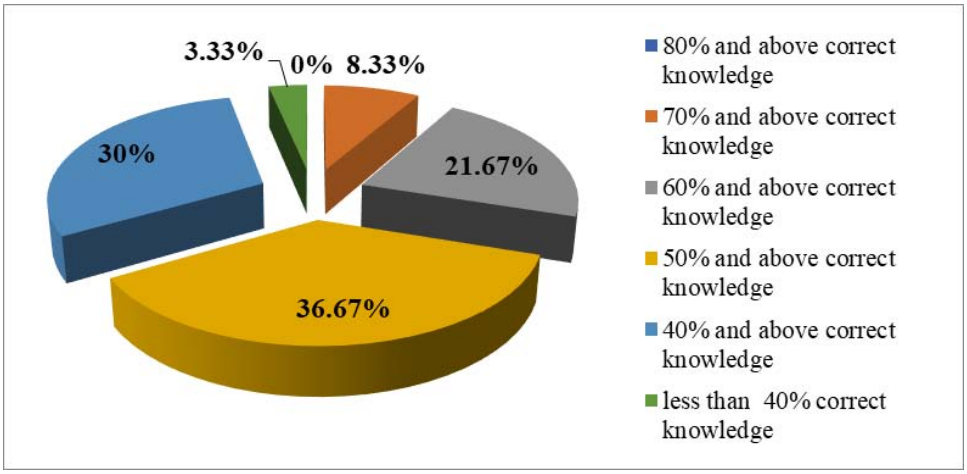

Fig. 1. Distribution of the respondents according to their knowledge on lac cultivation.

Figure1 indicated that the highest proportion (36.67 %) of the respondents were in 50%and above knowledge category while 30 % respondents fell into 40%and above knowledge category. But no respondents were found 80% and above knowledge category. So there are opportunities to increase the lac cultivation related knowledge of the respondents. Better knowledge on lac cultivation will be helpful to make the farmer more efficient and confident.

Score of knowledge measuring questions

Table 1 indicated that respondents had top most knowledge in answering the question 'Name two host plant of lac' where the total score was 118out of 120 followed by answer of the questions 'Mention two uses of lac' (score= 109), 'Which is the suitable time for Baishakhi and kartiki lac harvesting?' (Score = 100), respectively. The question 'Name two fungicides that can be used against lac crop infesting disease.' was at 10^{th} rank with 11 score. That means farmer's response was most correct when they were asking about general aspect of lac cultivation but their response was less correct when they were asked about modern technique to improve the lac production. Entomology division, Bangladesh Agricultural Research Institute, Gazipur and Lac research station, Chapainawabganj has developed some modern lac cultivation technology (Sarker *et al.*,2014) but most of the farmer didn't know about it. Agriculture Extension Department can play role to disseminate this technology to the farmer. Training, workshop, seminar etcon modern lac cultivation technology for researcher, extension worker and farmer would be helpful to improve the situation in the study area.

Table 1. Distribution of the individual knowledge measuring questions according to their score and rank order

SL No	Questions	Score	Rank
01	Name two host plant of lac.	118	1
02	Mention two uses of lac.	109	2
03	Which is the suitable time for Baishakhi and kartiki lac harvesting?	100	3
04	Name two crops which can be used as inter crop with lac.	98	4
05	Mention the suitable time for pruning of host plant for Baishakhi and kartiki lac cultivation.	86	5
06	Name the steps of lac processing	56	6
07	Name two predator of lac insect	25	7
08	Name two bio-pesticides that used against lac insect pest.	21	8
09	Mention two techniques to preserve moisture in Baishakhi lac season.	15	9
10	Name two fungicides that can be used against lac crop infecting disease.	11	10

Attitude towards lac cultivation

Farmer's attitude towards lac cultivation scores ranged from 45 to 72, with an average of 55.22. The respondents based on attitude on lac cultivation scores were classified into three categories (Table 2). It was found that 76.67% of the respondents possessed moderately favourable attitude towards lac cultivation, 10% possessed highly favourable attitude and13.33% possessed less favourable attitude (Table 2). There were lot of scope to improve farmer's attitude towards lac cultivation. Education, training and awareness building activity would help the farmer to gain knowledge and help them to become rational and in turn increases their attitude. Friendly policy of lac production might improve the attitude of the farmer towards profitable lac cultivation.

Table 2. Distribution of the lac farmer according to their attitude towards lac cultivation

Categories	respondents	%	Mean	Standard Deviation
Less favorable attitude (up to 50)	8	13.33		
Moderately favorable attitude (51-60)	46	76.67		
Highly favorable attitude (over 60)	6	10	55.22	4.78
Total	60	100		

Table 3. Distribution of the individual attitude measuring statements according to their score and rank order

SL No	Statements	Score	Rank
01	Lac cultivation require less chemical fertilizer and water (+)	282	1
02	Insect and Pest attack is minimum in lac cultivation (+)	262	2
03	Lac cultivation ensure best use of local resource (+)	260	3
04	Lac cultivation is not harmful for host plant (-)	256	4
05	Lac cultivation is a good way to income generate for the ultra poor persons (+)	252	5
06	Lac cultivation is laborious and it reduce prestige (-)	250	6
07	Host plant is not available for lac cultivation (-)	236	7
08	Lac cultivation creates working opportunity for women and youth (+)	231	8
09	I am willing to establish in this profession and like to obtain more knowledge for my own sake (+)	229	9
10	Inter cropping is possible in lac cultivation (+)	221	10
11	Lac cultivation is less expensive compare to other crop cultivation (+)	207	11
12	Lac production, processing and marketing technique is very difficult (-)	203	12
13	Lac cultivation give maximum return with minimum input (+)	185	13
14	Pesticide spray in mango field causes less production of lac (-)	132	14
15	Market price of lac is very low (-)	107	15

Score of attitude measuring statements

The attitude measuring statements about lac cultivation are presented with their score and rank in Table 3. It was observed that, "Lac cultivation require less chemical fertilizer and water" this statement ranked first with the score of 282 followed by statement, "Insect and Pest attack is minimum in lac cultivation", score, 262. Statement, "Lac cultivation ensure best use of local resource", ranked 3rd and its score was 260. 'Market price of lac is very low', was at 15th rank with 107 score. Though farmer's showed very much positive attitude towards different environmental and social issues of lac cultivation but they were anxious about economic return from lac cultivation.

Farmers' demographic characteristics

Four socio-demographic information of the farmers like age, educational qualification, annual income, training received are presented in Table 4. The Table provided categories, frequencies, and percentage for all these demographic variables and indicated that most of the farmers (50%) were in 30 to 40 years of age compared to 26.67% were between 41 to 50 years. From the present study it was found that 56.67% of the respondents were educated either in primary, secondary or tertiary level but 43.33% of the respondents had no education. The average income of the respondents of the study area was Tk.83450.00 which was lower than the national average of Tk.96256 (1203.20 USD) (Trading Economics, 2018). Most respondentsof the study area(83.33%) had no training exposure on lac cultivation.

Table 4. Demographic characteristics profile of the farmers (n= 60)

Variable	Categories	Frequencies	%
Farmer's Age (Mean = 38.62, SD ± 08.06)	Less than 30 years	9	15
	30 to 40 years	30	50
	41 to 50 years	16	26.67
	51 to 60 years	5	8.33
	More than 60 years	0	0
Level of education (Mean = 3.30, SD ± 3.42)	No education/illitarate	26	43.33
	Primary education	23	38.33
	Secondary (SSC level)	9	15
	Upper SSC level	2	3.33
Family annual income [Mean = 83450.00 BDT (1043 USD)]	Less than 50000 BDT	4	6.67
	50000 to 70000 BDT	31	51.67
	More than 70000 BDT	25	41.67
Training participation on lac cultivation	No training	50	83.33
	Training	10	16.67

Source: Surveyed data collected by the author's in this study

Results indicated that most of the respondents were middle aged person and many of them were illiterate. Middle aged person has good working ability but they need proper educationto improve their observation, analysis, integration, understanding, decision making and adjustment to new situation. Respondent's training experience was also very poor. Different GOS and NGOS can play a vital role to strengthen their services in this regard.

Relationship between the selected characteristics of the respondents and their Knowledge and attitude towards lac cultivation

PearsonsCorrelation Co-efficient "r" has been used to determine the relationships between the selected demographic characteristics of the respondents and their knowledge and attitude towards lac cultivation. Training exposure showed significant positive relationship with farmers' knowledge and attitude where education showed significant positive relationship only with farmers' knowledge.Others relationships were non-significant (Table 5). So, farmers' knowledge and attitude will increase with the increase of training program.

Table 5. Relationship between demographic characteristics of the farmer and their knowledge and attitude towards lac cultivation

Selected characteristics of the respondents	Coefficient correlation value of 'r'	
	Knowledge	Attitude
Age	- 0.030	- 0.195
Education	0.404**	0.203
Annual income	0.146	0.039
Training exposure	0.568**	0.422**

** Correlation is significant at 1% level

Conclusions and Recommendations

The present study assessed the farmers' knowledge and attitude towards lac cultivation at lac growing area of Bangladeshi.e, Naogan and Chapainawabganjdistricts. Findings exhibited that most of the farmers (91.67%) in this study were below 51 years of age, while about 56.66% of them were educated either primary, secondary or more. The average family annual income of the farmers was 1043 USD which was lower than the average national income of the Bangladesh (1203.20 USD). Most of the farmer (83.33%) did not receive any training on lac cultivation and related issues. Meanwhile, 58.34% of them had 50- 70% correct knowledge on lac cultivation. About 90% of the farmers maintained moderately to less favorable opinion towards lac cultivation. Farmers training participation on lac cultivation had an influence on their knowledge and attitude towards lac cultivation. Thisfindings indicate that higher level of training exposure will result higher knowledge and attitude towards lac cultivation. The farmers should be provided with different types of need-based training related to

lac cultivation. Hence, the government and non-government organization should take proper steps in this regard.

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