### FARMERS' KNOWLEDGE ON STRAWBERRY CULTIVATION

T. MONDAL, M.S. ALI, T. BAGUM, D. DAS AND M.M. HAQUE

# FARMERS' KNOWLEDGE ON STRAWBERRY CULTIVATION

T. MONDAL[1*], M.S. ALI[2], T. BAGUM[3], D. DAS[4] AND M.M. HAQUE[5]

[1&5]Lecturer, [2]Professor, [3]Associate Professor, [4]MS Student, Department of Agricultural Extension and Information System, Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh.

*Corresponding author & address: Tanushree Mondal, E-mail: tanushree09sau@gmail.com

**ABSTRACT**

Mondal T, Ali MS, Bagum T, Das D, Haque MM (2016) Farmers' knowledge on strawberry cultivation. *J. Innov. Dev. Strategy.* 10(2), 22-25.

The purpose of this study was to determine the knowledge of the farmers regarding strawberry cultivation and also to explore the relationships between nine selected characteristics of the strawberry farmers and their knowledge on strawberry cultivation. The selected characteristics were age, level of education, farm size, strawberry cultivation area, annual family income, income from strawberry cultivation, training exposure, extension contact and strawberry cultivation experience. Data was collected from 113 strawberry farmers from two villages of Yusufpur Union of Charghat Upazila under Rajshahi District by using an interview schedule. Descriptive statistics such as mean, standard deviation, range and percentage were used to describe the variables under consideration. Pearson product moment correlation coefficient was estimated for relationship measurement. Majority (78.76 percent) of the farmers possessed medium knowledge while 14.16 percent and 7.08 percent of the farmers possessed low and high knowledge, respectively. Level of education, strawberry cultivation area, annual income from strawberry cultivation, extension contact and strawberry cultivation experience had significant positive relationship with their knowledge on strawberry cultivation.

*Key words: strawberry, strawberry farmer, knowledge, correlation, interview schedule*

## INTRODUCTION

Strawberry (*Fragaria* x *ananassa* Dutch.), is a nutritious and delicious exotic fruit has recently been adapted in Bangladesh. Strawberry is found in different parts of the world and this heart-shaped fruit of love had been mentioned by the Roman Poets Virgil and Ovid in the first century and in England gardeners had cultivated strawberries since the sixteenth century (Boriss *et al.* 2006). Strawberry is new fruit crop and its cultivation technique is fairly new in Bangladesh whereas cultivation area is increasing day by day. It is cultivated in an area of 0.2 million hectares and producing 0.3 million metric tons (Sakila *et al.* 2007). Compared to other fruits like apples, oranges or bananas, strawberries have the highest amount of nutrients. Strawberries are packed with antioxidants, lower blood pressure and protect heart. It also packed with essential vitamins and minerals, there are also sodium, cholesterol and fat free. Strawberries fiber helps regulate digestion and reduce the risk of cardiovascular disease through its cholesterol-lowering (Anonymous 2013). Describing strawberry as 'nutritious fruit' and also a 'cash crop' and strawberry could play an important role in fulfilling nutrition and also earning foreign currency through exports.

In Bangladesh strawberry cultivation is predominant in Rajshahi, Dinajpur, Panchagar and Jessore districts. Strawberry cultivation starts in October-November while harvest continues from January to March. There are many varieties which are suitable for cultivation in Bangladesh, these are: 'BARI Strawberry-1, RU strawberry-1, 2, and 3 and modern horticulture center in Natore developed Modern Strawberry-1, 2, 3, 4 and 5. Numbers of growers are now becoming interested in strawberry cultivation in spite of facing several problems such as, less sweetness, short shelf-life, color degradation and damage during transportation. The fruit quality of strawberry is influenced by agro-technical treatments i.e., mulching, irrigation, fertilization, crop rotation, intercropping, proper field preparation, planting time, health status and type of seedlings (LaMondia *et al.* 2002). The fruit is highly perishable and hence a great deal of care is needed in handling as well as in marketing. Fruits should be picked in the early morning and sent to market in the afternoon of the same day or picked in the late afternoon stored overnight in a cool place and sent to market in the following morning, which is really a challenge for the strawberry farmers. So to take challenge and to perform better in strawberry cultivation farmers required adequate knowledge in different aspects of strawberry cultivation. Considering the above facts, the research is undertaken with the following specific objectives: i) to determine farmers' knowledge on strawberry cultivation; ii) to assess some selected characteristics of the strawberry farmers; iii) to explore the relationship of the farmers' selected characteristics with their knowledge on strawberry cultivation.

## METHODOLOGY

The study was conducted at Yusufpur union under charghat upazilla of Rajshahi district. Out of 15 villages of Yusufpur union, two were purposively selected. This was because strawberry is grown widely compared to other villages. The selected villages were Shahapur and Mirkamari. The strawberry farmers of these two selected villages were considered as the population of the study. Lists of strawberry farmers of these villages were prepared with the help of respective Sub Assistant Agriculture Officers (SAAO) of the area. Total strawberry farmers of this study area were 160. To make a respective sample from the population following formula was used as developed by Kothari (2004):

$$N = Z^2 P QN / (N-1) e^2 + Z^2 P Q$$

Where, N = sample size, Z = table value at 1 df (1.96), P = probability (assume 0.5), Q = remaining from probability (1-P), N = total population, e = the level of precision (5%)

By using this formula, 113 strawberry farmers were selected proportionately and randomly as the sample of the study. For the purpose of data collection, a semi-structured interview schedule was used. Data was collected from 3 October to 28 October 2015. For measuring knowledge on strawberry cultivation 20 questions were selected. Two (2) score was assigned for each correct answer and zero (0) for wrong or no answer. Partial score was assigned for partially correct answer. Thus the knowledge on strawberry cultivation score of the respondent could range from 0 to 40, where zero (0) indicating very poor knowledge and '40' indicate the very high knowledge on strawberry cultivation. Age of a respondent was measured in terms of years from his/her birth to the time of interview. It was expressed in terms of completed years. The education of a strawberry farmer was measured by the number of years of schooling completed in an educational institution. A score of one (1) was given for each year of schooling completed. If a strawberry farmer couldn't read and write, his/her education score was zero (0), while a score of 0.5 was given to a strawberry farmer who could sign his/her name only. The farm size of a strawberry farmer referred to the total area of land on which his/her family carried out farming operations, the area being in terms of full benefit to his/her family. Strawberry cultivation area was measured by the area of land under his/her management only for cultivation of strawberry. The unit of measurement was in hectare. Annual family income of strawberry farmer was measured in thousand taka. Annual income from strawberry cultivation of a farmer was measured in thousand taka. A score of one was given for each Tk. 1,000 to compute the annual income scores of the respondents and their income from strawberry cultivation. Training exposure of strawberry farmer was measured by the total number of days he/she participated in different training programs in his/her entire life. A score of one (1) was assigned for each day of training received. A zero (0) score was assigned for no training. Extension contact score of a respondent was determined by summing up his/her scores for contact with ten selected media with four alternative responses as 'regularly', 'occasionally', 'rarely' and 'never' and weights were assigned as 3, 2, 1 and 0 respectively. The extension contact score of a respondent was determined by summing up his/her scores for contact with all the selected media. Thus possible extension contact score can vary from zero (0) to 30, where zero (0) indicated no extension contact and 30 indicated the highest level of extension contact. Strawberry cultivation experience of the respondent was measured by the number of years a respondent engaged in strawberry cultivation. The measurement included from the year of first strawberry cultivation till the year of data collection. A score of one (1) was assigned for each year of experience.

## RESULTS AND DISCUSSION

### Knowledge on strawberry cultivation

Farmers' knowledge on strawberry cultivation scores could range from 0 to 40. However, their observed knowledge scores ranged from 20 to 40, the mean being 30.52 and with a standard deviation of 4.23. The farmers were classified into three categories as: "low knowledge", "medium knowledge" and "high knowledge". The distribution of the farmers according to their knowledge level is shown in Table 1.

Table 1. Distribution of the strawberry farmers according to their knowledge on strawberry cultivation

| Categories | Basis of categorization (score) | Respondents | | Mean | Standard deviation |
|---|---|---|---|---|---|
| | | Number | Percent | | |
| Low knowledge | Up to 25 | 16 | 14.16 | | |
| Medium knowledge | 26-35 | 89 | 78.76 | 30.52 | 4.23 |
| High knowledge | Above 35 | 8 | 7.08 | | |
| Total | | 113 | 100 | | |

Source: Author's estimation

Majority (78.76%) of the farmers possessed medium knowledge and 14.16 percent and 7.08 percent of the farmers possessed low knowledge and high knowledge on strawberry cultivation, respectively. It means that overwhelming majority (92.92%) of the farmers had low to medium knowledge. But to perform better in strawberry cultivation, farmers should have adequate knowledge on different aspects of strawberry cultivation.

### Selected characteristics of the strawberry farmers

Selected characteristics of the strawberry farmers have been presented in Table 2, which indicates that majority (53.1 percent) of the farmers, were young aged and most of them had 'secondary level' of education (35.4 percent). Majority of the farmers had small farm size (63.7 percent), medium strawberry cultivation area (69 percent), high annual family income (51.3 percent) but medium income from strawberry cultivation (40.7 percent). Majority of the farmers had no training (83.2 percent), medium extension contact (55.7 percent) and strawberry cultivation experience was low (62.4 percent).

Table 2. Salient features of the selected characteristics of the farmers

(n=113)

| Sl. No. | Characteristics | Range | | Categories | Farmers | | Mean | SD |
|---|---|---|---|---|---|---|---|---|
| | | Possible | Observed | | No. | % | | |
| 1. | Age (Year) | unknown | 21-69 | Young (Upto35) | 60 | 53.1 | 36.91 | 11.50 |
| | | | | Middle (36-50) | 38 | 33.6 | | |
| | | | | Old (Above 50) | 15 | 13.3 | | |
| 2. | Level of education (Year of schooling) | unknown | 0-17 | Illiterate (0) | 3 | 2.7 | 8.49 | 4.36 |
| | | | | Can sign only (0.5) | 10 | 8.8 | | |
| | | | | Primary (1-5) | 20 | 17.7 | | |
| | | | | Secondary (6-10) | 40 | 35.4 | | |
| | | | | Higher secondary (11-12) | 25 | 22.1 | | |
| | | | | Above higher secondary (above 12) | 15 | 13.3 | | |
| 3. | Farm size (Hectare) | unknown | 0.30-3.09 | Small (0.20 to less than 1 ha.) | 72 | 63.7 | 0.95 | 0.46 |
| | | | | Medium (1 to 3 ha.) | 40 | 35.4 | | |
| | | | | Large (Above 3 ha.) | 1 | 0.9 | | |
| 4. | Strawberry cultivation area (Hectare) | unknown | 0.10-0.81 | Small area (less than 0.15 ha.) (<mean-1sd) | 21 | 18.6 | 0.29 | 0.14 |
| | | | | Medium area (0.15 to 0.43 ha.) (mean±1sd) | 78 | 69.0 | | |
| | | | | Large area (above 0.43 ha.) (>mean+1sd) | 14 | 12.4 | | |
| 5. | Annual family income ('000' Taka) | unknown | 285-1200 | Medium (Up to 500) | 55 | 48.7 | 569.37 | 182.53 |
| | | | | High (Above 500) | 58 | 51.3 | | |
| 6. | Income from strawberry cultivation ('000' Taka) | unknown | 76-654 | Low (Up to 150) | 32 | 24.3 | 252.04 | 132.67 |
| | | | | Medium (151-300) | 46 | 40.7 | | |
| | | | | High (Above 300) | 35 | 31.0 | | |
| 7. | Training exposure (No. of days) | unknown | 0-2 | No training (0) | 94 | 83.2 | 0.22 | 0.053 |
| | | | | Low training (1-2) | 19 | 16.8 | | |
| 8. | Extension contact (Score) | 0-30 | 4-15 | Low extension contact (4-7) | 21 | 18.6 | 9.91 | 2.28 |
| | | | | Medium extension contact (8-11) | 63 | 55.7 | | |
| | | | | High extension contact (12-15) | 29 | 25.7 | | |
| 9. | Strawberry cultivation experience (Years) | unknown | 2-5 | Low experience (1-3) | 71 | 62.4 | 3.35 | 0.96 |
| | | | | Medium experience (above 3) | 42 | 37.2 | | |

SD = Standard deviation
Source: Author's estimation

**Relationship of the selected characteristics of strawberry farmers with their knowledge on strawberry cultivation**

The summary result of correlation analysis has been presented in Table 3.

Table 3. Co-efficient of correlation (r) between selected characteristics of the strawberry farmers and their knowledge on strawberry cultivation

| Independent variables | Correlation of co-efficient (r) with knowledge on strawberry cultivation | Dependent variable |
|---|---|---|
| Age | 0.116 | Knowledge on strawberry cultivation |
| Level of education | 0.231* | |
| Farm size | 0.032 | |
| Strawberry cultivation area | 0.379** | |
| Annual family income | 0.039 | |
| Annual income from strawberry cultivation | 0.332** | |
| Training exposure | 0.139 | |
| Extension contact | 0.447** | |
| Strawberry cultivation experience | 0.353** | |

*Correlation is significant at the 0.05 level of probability
** Correlation is significant at the 0.01 level of probability
Source: Author's estimation

Table 3 reveals that level of education, strawberry cultivation area, annual income from strawberry cultivation, extension contact and strawberry cultivation experience had significant positive relationship with their knowledge on strawberry cultivation. Possible reason might be level of education, strawberry cultivation area, annual income from strawberry cultivation, extension contact and strawberry cultivation experience facilitates individuals to receive more information related to strawberry cultivation which ultimately increase the understanding and knowledge level of the strawberry cultivation. On the other hand age, farm size, annual family income, training exposure had no significant relationship with their knowledge on strawberry cultivation.

**CONCLUSION**

On the basis of findings it was found that majority of the farmers had medium to low knowledge on various aspects of strawberry cultivation. But adequate knowledge should be required in every steps of strawberry production. Knowledge makes individuals to become rational and conscious about related field. So the production of strawberry will not be possible to improve a significant extent unless the concerned authorities (different GO's and NGO's) take proper steps to improve farmer's knowledge in overall management of strawberry cultivation and in particular the aspects in which their knowledge is poor. They should provide proper training on strawberry cultivation, marketing opportunity and available credit facilities to increase their total production which will ultimately uplift their socio-economic condition and the country can earn huge foreign currencies by exporting strawberry.

**REFERENCES**

Anonymous (2013) Care2 Healthy Living Website. Retrieved on 15 July 2016 at: http://www.care2.com/greenliving/10-super-health-benefits-of-strawberries.html.

Boriss H, Brunke H, Kreith M (2006) Commodity Profile: Strawberries. Agricultural Marketing Resource center. Agricultural Issues Center University of California.

Kothari CR (2004) Research Methodology Methods and Techniques. Second Edition, New Delhi: New Age International publisher, p. 39.

LaMondia JA, Elmer WH, Mervosh TL, Cowles RS (2002) Integrated Management of Strawberry Pests by Rotation and Intercropping. Crop Protection, 21: 837-846.

Sakila S, Ahmed MB, Roy UK, Biswas MK, Karim R, Razvy MA, Hossain M, Islam R, Hoque A (2007) Micropropagation of Strawberry (*Fragaria* x *ananassa* Dutch.). A Newly Introduced Crop in Bangladesh. *American- Eurasian J. Sci. Res.* 3(2), 130-132.