TRAINING NEED OF THE PINEAPPLE GROWERS FOR BOOSTING PRODUCTION IN HILLY AREAS OF SREEMANGAL UPAZILA UNDER MOULVIBAZAR DISTRICT

ABSTRACT

The focus of the study was to determine and describe the training need of the pineapple growers in a hilly area of Sylhet region and explores the relationship between the selected characteristics of growers and training need. Data were collected from randomly selected 75 pineapple growers out of 228 of three unions namely Sreemangal, Ashidron, and Sindhurkhan of Sreemangal upazila under Moulvibazar district using a pre-tested interview schedule from 1 September to 2 October 2020. Through Focus Group Discussion (FGD) with the growers, a total of 12 different aspects of pineapple cultivation were identified as inadequately skilled for modern pineapple cultivation. For quantification of training need, each respondent was asked to answer the extent of training need against each of those aspects. Results revealed that most of the pineapple growers (58.7%) had medium training need while 29.3% had high and only 12.0% had low training need. The top five training need aspects of pineapple cultivation were appropriate amount and time of fertilizer application, modern method of insect–pest identification and control, soil moisture conservation technique, and preventive measure of fruit sunburn. Correlation analysis indicated that age (-0.272*), educational (-0.526**), annual income (-0.269*), experience of pineapple cultivation (-0.455**), knowledge about pineapple cultivation (-0.807**), training received (-0.558**), and use of information source (-0.331**) were found negatively significant with their training need.

Keywords: Training Need, Pineapple Growers, Aspects of Pineapple Cultivation, Focus Group Discussion (FGD);

1. INTRODUCTION

Bangladesh is largely agrarian. Agriculture accounts for over 15% of the country's GDP and employs roughly 41% of the workforce (BBS, 2017). Fruits are critical to the country's overall economic prosperity. Fruit production in our country is expanding daily, and the same is true for pineapple production. In terms of overall cropping area and production, pineapple ranks 4th among all fruits grown in the country (BBS, 2014). In 1999-2000, the country's total pineapple production was 148350 metric tons, which climbed to 197518 metric tons in 2014-2015 (BBS, 2017). Pineapple is a good source of a variety of vitamins and minerals. It's high in vitamins A, B, and C. It contains calcium, phosphorus, and iron. A ripe pineapple has 13 percent sugar and 6 percent citric acid. Bromelin is a proteolytic enzyme found in fresh pineapple. As a result, pineapple is a good source of nutrients as well as medicinal properties (Sen, 1990).

The climate in the tropics is favorable for pineapple cultivation. It's grown virtually everywhere in Bangladesh, especially in mountainous and highland areas where rain and floodwater don't have a chance. Although Bangladesh is not a tropical country, the climate and soil in many parts of the country are perfect for pineapple cultivation. Pineapple is abundantly grown in Sylhet, Moulvibazar, Chittagong, Bandarban, Dhaka, and Tangail districts. Bangladesh produced 234500 metric tons of pineapple on 39600 acres of land in 2009-2010 (BBS, 2010). However, the area under production and overall production are steadily expanding. In Bangladesh, the total area under pineapple production was 36800 acres, with a production of 217439 metric tons in 2018-2019 (BBS, 2019).

After Dhaka, Chattagram, and Mymensingh, the Sylhet division produces the fourth most pineapples in Bangladesh. Pineapple is grown in various districts in the Sylhet division, including Moulvibazar,

Habiganj, Sylhet, and Sunamganj. Among them, Moulvibazar ranks 1st in terms of the pineapple-producing district under the Sylhet division (BBS, 2019). In Bangladesh, not all places are equally favorable for pineapple farming. However, certain locations' soil and climatic conditions are far more conducive to commercial pineapple growing. One of these localities is Sreemangal upazila in the Moulvibazar district. Pineapple cultivation is the primary source of income for many growers in Sreemangal Upazila. Furthermore, pineapple accounts for almost 70% of the fruit production in Sreemangal (Anonymous, 2020).

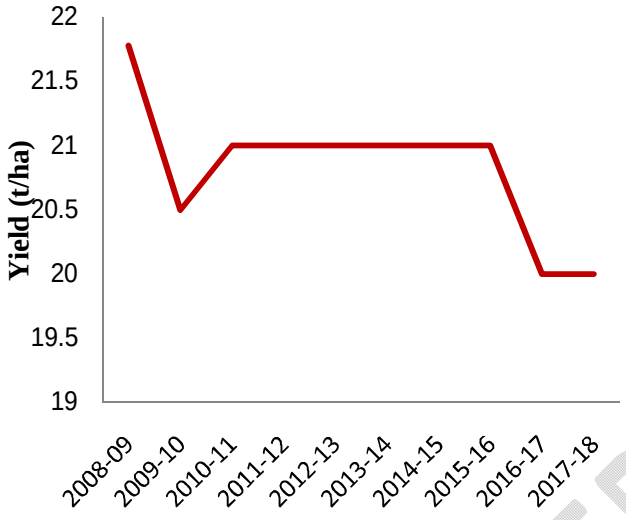

Figure 1. Yield Rate of Pineapple from 2008-09 to 2017-18 in Sreemangal

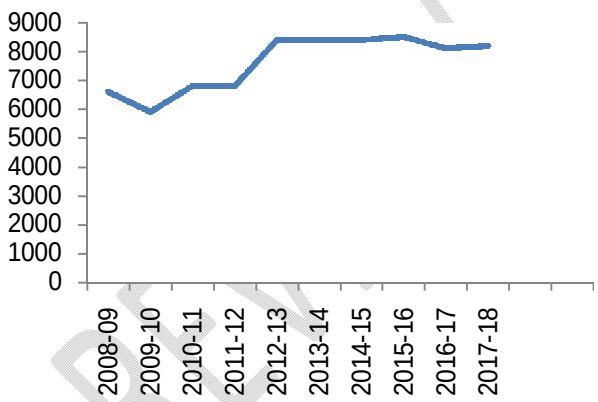

Figure 2. Pineapple Production (mt) from 2008-09 to 2017-18 in Sreemangal

(Source: BBS, 2018; BBS, 2017; BBS, 2016; BBS, 2015; BBS, 2014; BBS2013; BBS, 2012; BBS, 2011; BBS, 2010)

Pineapple (*Ananas comosus*) cultivation plays a vital role in the socio-economic upliftment of the extensive areas of Sreemangal upazila. Figure 1 shows that the yield (t/ha) of pineapple in Sreemangal upazila was constant rate during the year 2010-11 to 2015-16. But in recent years yield of pineapple was decreased.

It might be since the major portion of growers in the study area are middle to old aged and they are not able to perform modern pineapple production practices significantly as they always follow traditional practices in pineapple production. On the other hand, Figure 2 shows that pineapple production is increasing in the last few years which means the area under modern pineapple production is increasing day by day due to a large portion of young growers are involving in modern pineapple production. But the young growers of the study area cannot perform their job satisfactorily due to a lack of knowledge and skills regarding various aspects of modern pineapple cultivation practices. Increased agricultural production relies heavily on growers' knowledge and skills in agricultural technologies. However, the majority of farmers lack appropriate knowledge of contemporary agricultural technologies. Morrill (1968) reported that farmers are frequently frustrated by new agricultural techniques due to a lack of awareness of the key factors. As a result, they blame the advances and return to old ways of doing things. However, these growers lack an understanding of pineapple cultivation, post-harvest management, and marketing. The main issues are caused by growers' lack of technical knowledge, poor fertilizer administration, ineffective IPM practices, and a lack of disease resistance varieties, among other things.

Finding growers' training need helps to scheme extension approaches and perfect policies that could assist improve the knowledge and skills of growers and boosting productivity (Kshash, 2016)). To improve the knowledge, skills, and attitudes of the farmers on different aspects of pineapple cultivation training is required. Bhuiyan (1984) unveiled that training prepares an individual to be more innovative and respective to new concepts or practices. So it has been urgent to determine which of the socio-economic characteristics of the growers influence training needs and which aspects of pineapple production need to improve through training.

2. MATERIALS AND METHODS

The focus of the study was to determine and describe the training need of the pineapple growers in hilly areas and explore the relationship between their selected characteristics and training need. Data were collected from randomly selected 75 respondents from three unions namely Sreemangal, Ashidron, and Sindhurkhan of Sreemangal upazila, Moulvibazar district using a pre-tested interview schedule from 1 September to 2 October 2020. Map of the Study Locations showing in Figure 3. Through Focus Group Discussion (FGD) with the pineapple growers of the study area, a total of 12 different aspects of pineapple cultivation were identified as unskilled which can be improved through training. Each respondent was asked to answer the extent of training needed against each of those aspects.

Measurement of Training Need

A four-point rating scale was used to ascertain the extent of training needed for each aspect. The score was assigned as 3, 2, 1, and 0 for ‘high’, ‘medium’, ‘low’, and ‘no’ training needs, respectively. The summation of obtained score against 12 aspects represented the extent of the training needed in pineapple cultivation by any respondent. In this way, the total score of each respondent could range from 0 to 36, where 0 means no training need and 36 indicated high training need in pineapple cultivation.

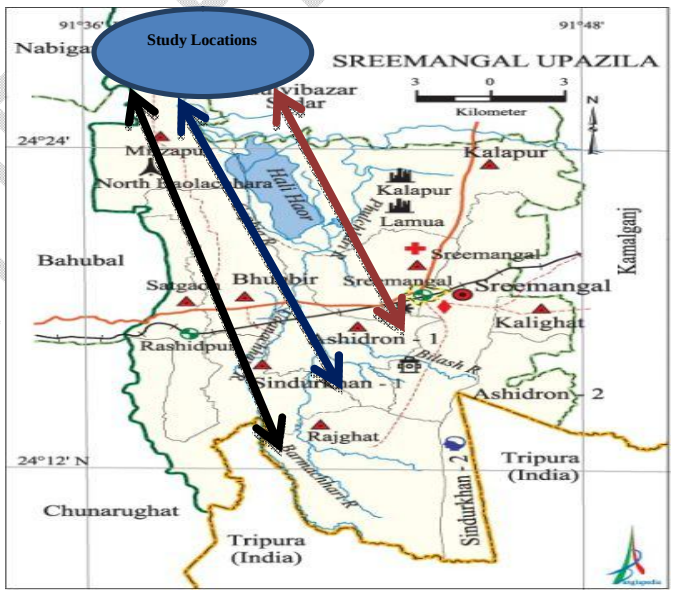

Figure 3. Map of the Sreemangal Upazila Showing Study Locations (Banglapedia, 2021)

Measurement of Training Need Index (TNI)

Identified 12 different aspects of pineapple cultivation were ranked individually in an order list based on individual Training Need Index (TNI) scores. The TNI score ranged from 38 to 221 against a possible range of 0 to 225. However, to ascertain the rank order of these aspects, the individual Training Need Index (TNI) was calculated using the following formula: $\mathbf{TNI = (T_n \times 0) + (T_l \times 1) + (T_m \times 2) + (T_h \times 3)}$
Where,
TNI= Training Need Index
T_n = Number of growers who had no training need at all
T_l = Number of growers who had low training need
T_m = Number of growers who had medium training need
T_h = Number of growers who had high training nee

The acquired data was scientifically coded, classified, tabulated, and evaluated. The data was analyzed on a computer using the SPSS/PC+ package application. The descriptive data were interpreted using simple statistics such as frequency counts, ranges, percentages, averages, means, standard deviations (SD), and rank order. A simple correlation analysis was used to determine the association between the respondents' specified socioeconomic factors and their training needs in twelve different aspects of pineapple cultivation. For data analysis and hypothesis testing, Pearson's product-moment correlation coefficient (r) was used. Five percent (0.05) and one percent (0.01) levels of probability were used as the basis for rejecting or accepting any null hypothesis.

3. RESULTS AND DISCUSSION

3.1 Training Need of the Pineapple Growers

Training helps growers to incorporate the latest scientific advances and technology tools into their daily operations. The results of enhancing their operations with these tools increase efficiency and can also lead to less harm to the environment and also increased profits. Training improves grower skills and knowledge in areas such as planting techniques, irrigation, pesticides, crop rotation, and crop storage after harvest. These skills enable growers to improve yields, protect their crops against weather-related shocks, and smooth their incomes year-round.

3.2 Overall training need of the pineapple growers

Twelve aspects of pineapple cultivation were selected to determine the training need of the pineapple growers. The training needs of the pineapple growers ranged from 3 to 31 against the possible range of 0 to 36. The average was 21.56 with a standard deviation of 6.43. Based on the training needs scores, the growers were classified into three categories; “low need” (up to 12), “medium need” (13-24), and “high need” (above 24). The distribution of the respondents according to their training needs is shown in Table 1.

Table 1. Categorization of the growers according to their overall training need (N=75)

Category (Score)	Frequency	Percent	Mean	Standard Deviation
Low need (up to 12)	9	12.0	21.56	6.43
Medium need (13-24)	44	58.7		
High need (above 24)	22	29.3		
Total	75	100		

Source: Author’s estimation based on field survey, 2020

Data contained in Table 1, indicate that the highest proportion (58.7%) of the growers had medium training needs as compared to 12% with low training needs and 29.3% with high training needs respectively. Data revealed that the majority (88%) of the pineapple growers had medium to high training needs on various aspects regarding production, intercultural operation, post-harvest handling, and marketing of pineapple. Kshash (2016) reported almost same findings in his study. The pineapple growers in the study area could not perform their jobs properly due to a lack of knowledge, education, communication exposure, etc. As a result, the respondents felt their training was needed on various aspects of pineapple cultivation.

3.3 Aspect-wise training need of the pineapple growers

Identified 12 different aspects of pineapple cultivation were ranked individually in an order list based on individual Training Need Index (TNI) scores. The TNI score ranged from 38 to 221 against a possible range of 0 to 225. However, the individual Training Need Index (TNI) is presented in Table 3.

Table 2. The extent of training need of the farmers on different aspects of Pineapple production

Training Aspects	The extent of training need				TNI	Mean	RO
	H	M	L	N			
Effectively seedling production	5	35	17	18	102	1.36	9th
Land preparation technique	1	28	30	16	89	1.19	10th
Technique to prevent fruits from sunburn	27	30	9	9	150	2.00	5th
Modern technique of soil moisture conservation	48	13	11	3	181	2.41	4th
Amount and time of fertilizer application	71	4	0	0	221	2.95	1st
Modern method of disease identification and control	61	4	7	3	198	2.64	2nd
Modern techniques of insect control	51	15	3	6	186	2.48	3rd
Ethrel Application technique	20	33	12	10	138	1.84	6th
Mulching techniques for hilly areas	7	40	21	7	122	1.63	7th
Harvesting, grading and packaging	0	22	29	24	73	0.97	11th
Pineapple storing	4	43	21	7	119	1.59	8th
Marketing techniques of pineapple	0	6	26	43	38	0.51	12th

Source: Author's estimation based on field survey, 2020

Note: H= High (score: 3), M= Medium (score: 2), L= Low (score: 1), N= Not at all (score= 0), TNI= Training Need Index, RO= Rank Order.

From Table 3, it is clear that among these twelve aspects, the appropriate amount and proper time of fertilizer application got first rank for training by the respondents followed by 'proper identification of the disease and modern techniques of control', 'modern techniques of insect control', 'modern technique of conservation of soil moisture', 'proper technique to prevent pineapple from sun burning', 'technique of Ethrel application' and so on. 'Marketing techniques of pineapple' ranked last by the respondents as a training need.

3.4 Selected Characteristics of the pineapple growers

11 (Eleven) Characteristics of the pineapple growers were selected as independent variables. These were: Age, educational qualification, family size, farm size, land area under pineapple cultivation, annual income, experience of pineapple cultivation, credit received, knowledge about pineapple cultivation, training received, and use of information sources by pineapple growers of the study area.

A summary of the analyzed results for the selected personal, economic, social, and psychological characteristics (independent variables) of the pineapple growers for this study has been presented in Table 3.

Table 3. Salient features of the pineapple growers (N = 75)

Characteristics (units)	Range		Growers		Mean	Standard Deviation
	Possible	Observed	Categories	Percent		
Age (year)	Unknown	17-72	Young (up to 35)	38.7		
			Middle age (36 – 55)	42.6	41.84	13.2
			Old (Above 55)	18.7		
Education (year of schooling)	Unknown	2-12	Primary (1-5)	45.3		
			Secondary (6-10)	40.1	6.59	2.7
			Higher Secondary (11-12)	14.6		
Family size (number)	Unknown	4-14	Small family (up to 4)	12.0		
			Medium family (5-6)	47.9	6.54	2.08
			Large Family (above 6)	40.1		
Farm Size (ha)	Unknown	0.13-6.99	Marginal (up to 0.2)	8.0		
			Small (0.21-1.0)	49.4	1.34	1.36
			Medium (1.01-3.0))	29.3		
			Large (above 3.0)	13.2		
Land area under pineapple cultivation (ha)	Unknown	0.02-3.03	Small size (up to 1.0)	85.3		
			Medium size (1.01-3.0)	10.7	0.61	0.68
			Large size (above 3.0)	4.0		
Annual income (taka)	Unknown	7000 - 350000	Low income (up to 115000)	33.2		
			Medium income (116000-230000)	36.1	179560	98128
			High income (above 230000)	30.7		
Experience in pineapple cultivation (year)	Unknown	2-47	Less experience (up to 15)	53.3		
			Medium experience (16-30)	29.4	18.4	13.24
			High experience (above 30)	17.3		

Credit received (taka)	Unknown	0-300000	No credit (000) Low (up to 100000) Medium (101000-200000) High (above 200000)	52.0 36.0 5.4 6.6	45133	81774
Knowledge about pineapple cultivation	0-26	6-24	Low (up to 12) Medium (13-18) High (above 18)	26.6 57.4 16.0	14.64	4.78
Training received	1-2	1-2	Yes (score 1) NO (score 2)	42.7 57.3	1.57	0.49
Use of information source	0 - 36	13 – 25	Low (13 – 17 score) Medium (18 – 21 score) High (22 – 25 score)	21.3 46.7 32.0	19.8	2.72

Source: Author's estimation based on field survey, 2020

The findings indicate that a large proportion (42.6%) of the growers were middle-aged compared to 38.7% young and 18.7% old aged respectively. Almost similar findings were reported by Alam (2006), Ali (2007), and Datta et al., (2020) in their respective studies. It might be because young to middle-aged growers comparatively give preference to pineapple cultivation to support their family to the relatively old growers. The old growers often show disinterest in pineapple cultivation due to their age and less stamina with different kinds of sickness and other problems. The findings of the study, however, indicate that about 45.3% of growers had primary education and 40.1% had a secondary level of education; the growers of these two categories are supposed to have high training needs due to low levels of education. Data revealed that the majority (47.9%) of growers belongs to medium families followed by 40.1% large family and 12% small family. The findings indicated that the average family size of the study area (6.54) was greater than the national average of 4.06 (BBS, 2016). Data revealed that the majority of the pineapple growers (49.4%) had small-size farms followed by 8% marginal, 29.3% medium, and 13.2% large-size farms. The average farm size was 1.34 hectares which is a little bit higher than the national average farm size which is equivalent to 0.80 hectares (BBS, 2007). Data revealed that the major portion (85.3%) of the pineapple growers had small pineapple land area compared to 10.7% medium and 4% large. The findings indicate that most of the pineapple growers (about 96%) had small to medium size pineapple fields. This happened due to the land size of the growers being decreased day by day through land division and fragmentation from generation to generation. Most of the respondents had medium income (36.1%) followed by high income (30.7%) and low income (33.2%) respectively. Here data revealed that a large portion of respondents (about 66.8%) had medium to high income. Almost similar findings were reported by Alam (2006) in his study. Since the majority (53.3%) of pineapple growers had less experience in pineapple cultivation, the conduction of training on different aspects of pineapple cultivation is necessary to enrich their knowledge and skill. The major portion (52%) of the respondents were not credit recipients, while 36% and 5.4% of the pineapple growers had received low and medium amounts of credit and only 6.6% of the pineapple growers had received high amounts of credit. Almost similar findings were reported by Rahman (2016) in his study. The finding indicated that the highest proportion (57.3%) of the pineapple growers had medium knowledge about pineapple cultivation, while 28.0% had low and 14.7% had high levels of knowledge about pineapple cultivation. Almost similar findings were reported by Alam (2006) and Rahman (2016) in their respective studies. Results revealed

that the overwhelming majority (57.3%) of the pineapple growers had not received training on modern pineapple production.

Use of Information Source

The use of information source scores of the growers ranged from 13 to 25 against the possible range of 0 to 36, with an average of 19.8 and a standard deviation of 2.72. Average use of different information sources are shown in Figure 4.

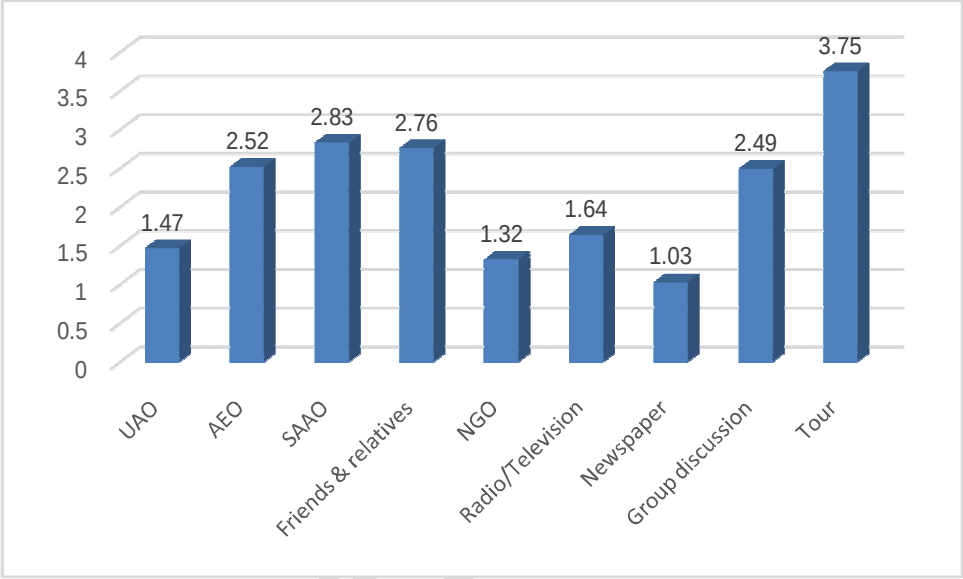

Figure 4: Use of information source by the pineapple growers

Figure 4 reveals that respondents of the study area collected their most required information for pineapple cultivation from other farmers (3.75 out of 4.0) when they travelled outside the village. The second highest used information source was SAAO (2.83 score) followed by friends and relatives, group discussion, SAAO, AEO, radio/television, UAO, NGO, and paper/poster respectively. Certainly, most of the growers did not receive information on pineapple production from extension agents since most of them had less extension contact. It might be because most of the growers in the study area were less educated and small-scale farmers. Almost similar findings were reported by Iwuchukwu *et. al.* (2013) and Owona Ndongo Pierre-Andre *et. al.* (2010) respectively. They found respondents in their study area collect most of the information from neighbors (86%) and other farmers (56%) in their respective studies.

Poor contact with extent media/communication sources decreases the opportunity for pineapple growers to get appropriate information about pineapple cultivation. Agricultural extension contact increases growers' diversified knowledge and makes them able to cope with adverse situations and also helps them to get the latest information about different agricultural activities. So, it is supposed to have high training need by the major portion of the growers as they have low communication exposure.

3.6 Relationship between the selected characteristics of the pineapple growers and their training needs in pineapple cultivation

Pearson's Product Moment Co-efficient of Correlation (r) was computed to explore the relationship between the selected characteristics of the pineapple growers and their training needs on pineapple cultivation. Five percent and one percent levels of probability were used as the basis for the rejection of a hypothesis. The value of 'r' was calculated at (75-2) = 73 degrees of freedom. The summary of the coefficient of correlation indicating the relationship between the selected characteristics of the respondents and their training needs on pineapple cultivation is shown in Table 4.

Table 4. The correlation coefficient between the selected characteristics of the pineapple growers with their training needs in pineapple cultivation

Focus variable	Selected characteristics	Correlation co-efficient (r) values with 73 df	Tabulated value of 'r'	
			At 0.05 level	At 0.01 level
Training need of the pineapple growers	Age	-0.272*	0.224	0.293
	Educational	-0.526**		
	Family size	-0.103NS		
	Farm size	-0.093NS		
	Land area under pineapple cultivation	-0.143NS		
	Annual income	-0.269*		
	Experience of pineapple cultivation	-0.455**		
	Credit received	-0.091NS		
	Knowledge about pineapple cultivation	-0.807**		
	Training received	-0.558**		
	Use of information source	-0.331**		

**Correlation is significant at the 0.01 level, *Correlation is significant at the 0.05 level,
NS= Non-significant relationship

Results revealed that family size, farm size, land area under pineapple cultivation, and credit received did not show any relationship with their training need in pineapple cultivation.

The findings demonstrate that the age of the pineapple growers had a negatively significant relationship with their training needs. Nevertheless, older growers had a negative relationship with the training needs. It might be because young to middle-aged growers comparatively give preference to pineapple cultivation to support their family to the relatively old growers. The old growers often show disinterest in pineapple cultivation due to their age and less stamina with different kinds of sickness and other problems. Education of the pineapple growers had a negative and significant relationship with their training needs. In other words, a higher level of education tends to the low need for training in pineapple cultivation technology. One of the major variables influencing a farmer's decision to accept the risks connected with new technology and the latest information source is education. Farmers with a higher level of education

are more likely to accept new technologies early and to use contemporary inputs more efficiently throughout the adoption process. As a result, low educated growers required high training need.

The findings imply that the annual income of the pineapple growers had a negatively significant relationship with their training needs. It can be assumed that annual income influenced the training needs of the farmers in pineapple cultivation. Growers with an increased income can afford the costs involved in the package adoption. This increment of income also assigns resources to support the technologies. As a result, growers with high incomes felt a low need for training. Results revealed that the farming experience of the pineapple growers had a negatively significant relationship with their training needs. Experience increases farmer's practical knowledge of improved methods of farming and thus they need less training. Farming experience is useful in the early stages of the adoption of a given technology.

The use of information sources by the pineapple growers had a negatively significant relationship with their training needs. When farmers do not have access to formal extension services, they use other sources of information or ask other farmers and their input suppliers (GFRAS, 2012). As a result most of the time they get misinformation regarding pineapple cultivation. Contact with extension agents and other extended teaching techniques alters farmers' attitudes, and as a consequence, they become more interested in adopting new technology, resulting in a low need for grower training. Growers who have access to extension services are more likely to diversify their crop portfolios indicating that farmers would diversify more in their farm production if given improved access to extension services. Communication exposure in extension service and different agricultural training center enrich the knowledge and experience of the growers by giving appropriate information regarding different agricultural activities. Results revealed that growers of the study area had low contact with extension agents. As a result, they required high training need in pineapple cultivation.

The findings imply that the knowledge about pineapple cultivation by the pineapple growers had a negatively significant relationship with their training needs. Higher cultivation knowledge helps to increase the income of the growers. Any decision to carry out agricultural practices must be supported by knowledge and skills. Improving productivity and production of crops is dependent on the knowledge of the growers. So, lacking adequate knowledge of pineapple cultivation in the study area tends to the high training need of the growers.

Results revealed that training received by growers had a negatively significant relationship with their training needs in modern pineapple cultivation. It indicates that the growers having more training are somewhat more productive than low-trained growers. Being trained the growers become more innovative in various farming practices regarding pineapple cultivation. Training helps to increase the knowledge and skills of the growers in pineapple cultivation. It could be said that sometimes new technologies were not accepted by non-trained growers compared to trained ones and they might face obstacles to taking new decisions for going outside of traditional practices considering the benefit.

4. CONCLUSION

Findings indicate that the growers' knowledge on various practices of pineapple cultivation was quite inadequate for the satisfactory level yield of pineapple. As knowledge is the precursor for any activity done properly, farmers' yield vary on what extent they equipped with modern method of cultivation. Training on different aspects of pineapple cultivation like appropriate amount and time of fertilizer application, insect-pest identification and control techniques, soil moisture conservation, and preventive measure of fruit sun burn can help them in finding the path of yield improvement and thereby the increase of income. With this, a contrasting relationship between training need and information source use reveals

accessing pineapple farmers to more information sources can minimize the need of training to some extent. So, the extension services should come forward to provide the need based training to the pineapple growers or at least do their best alternative based on resources allocation for improvement the yield and production of pineapple in the hilly areas of Sylhet region.

CONSENT

As per international standards or university standards written patient consent has been collected and preserved by the authors.

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