

Farmers' use of improved practices in Pineapple cultivation

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Abstract: The main purpose of this study was to determine the extent of use of improved practices of Pineapple cultivation and to explore the relationships between the characteristics of Pineapple farmers' and their use of improved practices. Micro-data from a farm-level survey conducted by the first author was the main source of data. Data were collected using interview schedule from 100 randomly selected Pineapple Farmers' out of 375 from the Ausnara Union under Modhupur Upazila of Tangail District during January 14 to March 15, 2012. Appropriate scales were developed in order to measure the variables; Person product moment correlation coefficients were computed to examine the relationship between the dependent and independent variables. Regarding overall use of improved practices, 20% of the pineapple farmers' belong to have low use of category while 68% had medium use and only 12% had high use of improved practices in pineapple cultivation. Use indices of intercultural operation, improved weed control devices, recommended dose of fertilizer, improved variety, selection of sucker, irrigation devices and plant protection measures were 1,2,3,4,5,6,7 respectively in respect of their comparative use. In terms of problem confrontation facing, the proportion of farmers' falling under high, medium and low confrontations where 43 %, 36% and 21% respectively. Coefficient of correlation was computed to explore the relationships between the selected characteristics of the Pineapple farmers with their use of improved practices in Pineapple cultivation. Among the nine independents variables, only three namely education, annual income and extension contact showed significant positive relationship with the use of improved practices in pineapple cultivation by the farmers'; rest of the variables namely; age, farm size, organizational participation, cosmopolitanness, attitude towards agricultural technology and innovativeness of the pineapple farmers' did not show any significant relationships.

Key words: Improved practices, pineapple cultivation and farmers.

Introduction

Fruits play a vital role in the overall economic performance of Bangladesh. The production of fruits including pineapple is increasing day by day in Bangladesh. Among all the fruits produced in the country, pineapple ranks 4th in terms of total cropping area and production. Generally, the ripen pineapple is consumed by the people of Bangladesh. Green pineapple is also used for making pickles. After extraction of its juice, the left over is used as livestock feed and also the tender leaves are used for the same purpose. Various food items like squash, syrup, jelly, etc. are produced from pineapple. Vinegar, alcohol, citric acid, calcium citrate etc. are also produced from it. Pineapple is also recommended as medical diet for certain disease (Moniruzzaman, 1988). The tropical climate is better for pineapple cultivation. Generally, it is grown almost all over Bangladesh especially in hilly and high land where there is no water stagnation. Long time drought is harmful for the production of pineapple. Drought affects its quality, quantity and size. Although Bangladesh is not a tropical country, the climate and the soils of many parts of Bangladesh are much more suitable for pineapple production. It is widely cultivated in the districts of Sylhet, Moulvibazar, Chittagong, Bbandarban, Dhaka and Tangail. The area under production and total production are increasing day by day. During 2006-07 the total area under pineapple production in Bangladesh was 16978 hectares and the production was 238360 metric tons (Anonymous, 2008). At least ninety varieties of pineapple are cultivated in the world. In Bangladesh, however, three varieties of pineapple are mostly grown. The three varieties are: Giant Kew, Honey Queen and Ghorasal. In the study area, mainly Giant Kew variety of pineapple has intensively been cultivated by the farmers for the last few years (Mondal and Mrittunjoy, 1988). Apart from this variety, one local variety named "Asshina" is grown by a few farmers of the study area. So, pineapple cultivation plays a vital role for socio-economic development of the pineapple growers of Tangail district (the study area)

where once upon a time the hilly lands were mostly barren. The life style of the people of that area was under developed earlier. But after practicing pineapple cultivation following some improved techniques, the people of the study area uplifted their condition socio-economically. Researches especially regarding the impact of pineapple cultivation on the socio-economic status of the farmers are dearth. Providing pertinent information through research is a crucial need which might help in appropriate production policies of pineapple. The present study was undertaken: to determine the extent of the use of some selected improved practices of pineapple cultivation by the farmers and to explore the relationship of the selected characteristics of the pineapple farmers with their use of improved practices of pineapple cultivation.

Materials and Methods

Pineapple is extensively cultivated all over Madhupur Upazila in Tangail District. So Madhupur Upazila of Tangail District was purposively selected as the study area. Ausnara union under Modhupur Upazila consists of 35 villages. Out 35 villages, 4 villages were selected randomly as the study area. Total numbers of farm families of the 7 villages were 375. Out of these population, 75 respondents were selected as sample following simple random sampling technique as per the following formula given by Kothari (2004). $n = \frac{(Z^2 \times \sigma^2 \times N)}{\{e^2 + Z^2 \cdot \sigma^2\}}$, Where, n = Size of the sample, N = Size of the population, e = Acceptable error, σ = Population standard deviation, Z = Standard normal variety at a given confidence level. After calculation, n = 75, The data were collected from the selected respondents through personal interview using a pre-designed and pre-tested interview schedule.

Measurement of the independent variables: The independent variables of the study was age, education, farm size, annual income, organizational participation, extension contact, Cosmopolitanness, innovativeness about

pine apple cultivation and attitude towards pineapple cultivation. Age of the respondents was measured in terms of years on the basis of response. A score of one was assigned for each year of age. Similarly 1 for each number of children. A score of one (1) was given to a respondent who has completed one year of schooling. A score of zero (0) was assigned to an illiterate respondent who cannot read and write at all. A respondent who could sign his/ her name only, his/her educational qualification was considered equal to one year of schooling and was given a score of one. Family farm size was estimated on the basis of the cultivated area either owned by a farmer or cultivated on share cropping, the area being estimated in terms of full benefit to the respondents. The total area of land thus obtained was considered as the farm size score of the respondent. Organizational participation was measured by the membership in different organizations and weights assigned as 0 for no participation, 1 for ordinary member, 2 for executive member and 3 for officer like president or secretary. Extension contact scores of the respondents were computed on the basis of their extension contact with different sources of information. Respondents were asked whether they contacted with those extension activities never, rarely, occasionally and frequently. Weights were assigned as 0 for never, 1 for rarely, 2 for occasionally and 3 for frequently. Thus a respondent's extension contact was obtained by adding the weights for responses to all the sources of information. To measure the cosmopolitanism on pineapple cultivation, each respondent was asked to answer some related questions regarding pineapple cultivation. Score 2 was given for each correct answer, 1 was given for each partially correct answer and 0 was given for each incorrect answer. The summation of obtained scores against all those questions represented the cosmopolitanism score of any respondent. The attitude of the respondents towards pineapple cultivation was measured by asking opinion upon some attitudinal statements. Score 5 was assigned to strongly agree statements, while scores 4, 3, 2 and 1 was assigned for agree, undecided, disagree and strongly disagree statements respectively. In case of negative attitudinal statement reverse score was assigned to each response. The summation of the obtained scores against those statements represented the attitude score of any respondent. Innovativeness measured by the time dimension which meant actual number of years. Score 5 was assigned to strongly agree innovativeness, while scores 4, 3, 2 and 1 was assigned for agree, undecided, disagree and strongly disagree statements innovativeness respectively.

Measurement of the dependent variable: Use of improved pineapple cultivation practices by the pineapple farmers was the dependent variable of the study. The improved pineapple cultivation practices are use of improved variety, selection of good sucker, recommended dose of fertilizers, modern irrigation devices, use of intercultural operation, improved weed control technique and plant protection measures. The seven improved practices are as variety measurement score consists of three sub score namely variety sub score, area sub score and duration sub score. 1 for 1 improved variety, 2 for 2

varieties and 3 for 3 varieties and duration sub score measured by assigning weights such as 1 for 1 year 2 for 2 years and 3 for 3 years and area sub score measured by 1 for 1 ha of land 2 for 2 ha of land and 3 for 3 ha of land under pineapple cultivation. Sucker selection score measured by improved sucker not cultivated for 0 score 1 year cultivated for 1 score and 2 years for 2 score and 3 or more cultivation years for 3 score. Fertilizer score measured by no use of fertilizer scoring for 0 and occasional use of fertilizer for 1 score and regular use of fertilizer for 2 score. Irrigation, intercultural operation, weed control and plant protection measure score at the same above score have done for each of pineapple farmers by adding score of overall use of improved pineapple cultivation practices score.

Results and Discussion

Characteristics profile of the respondents

Characteristics profile of the farmers were determined and presented in Table 1. It is revealed that most (about 80%) of the respondents were young to middle aged having varying level of education with no illiteracy. Majority (85%) of the farmers had small farm and the mean (4.25) value was smaller in comparison with national average of Bangladesh which was 4.25 (Anonymous, 2009) and 59% of Pineapple farmers had medium income and 15% high income. Table 1 reveals that majority (about 76%) of the farmers had small to medium farm size and about 44% of the farmers had medium extension contact. As regards to organizational participation, about 62% had low to medium organizational participation. All most all (about 90%) the respondents had 51-60% attitude regarding modern techniques of pineapple cultivation and they also maintained a favorable (70%) cosmopolitanism and low to medium 75% innovativeness of pineapple cultivation.

Extent use of improved Pineapple Cultivation Practices by the Pineapple farmers

Improved Practices of the farmers were determined and presented in Table 2. It is revealed that most 49% of the respondents had medium and 24% high use of improved variety and 73% had medium to high use of selection of sucker of pineapple cultivation. Majority (83%) of the farmers had medium to high use of recommended dose of fertilizer and the mean (9.74) value was smaller in comparison with national average of Bangladesh which was 9.7 (Anonymous, 2009) and 50% of Pineapple farmers had low use of irrigation devices. Table 2 reveals that majority (about 95%) of the farmers had medium to high use of intercultural operations and 68% farmers medium use of improved weed control devices of Pineapple cultivation. As regards to 46% of pine apple farmers no use of plant protection measure of pineapple cultivation.

Table 1. Socio demographic characteristic profile of the farmer

Variables	Measure-ment	Categories	Respondents Number	Respondents %	Mean	Standard Deviation
Age	Years	Young (<35)	41	41	42.48	11.82
		Middle (36-50)	36	36		
		Old (>50)	23	23		
Education	Year of schooling	Illiterate (0)	6	6	5.4	4.57
		Illiterate but can sign only(1)	35	35		
		Primary (1-5)	19	19		
		Secondary (6-10)	26	26		
		Higher secondary (>10)	14	14		
Farm Size	Hectare	Marginal (>1.0)	1	1	4.25	2.75
		Small (1.1-2.0)	23	23		
		Medium (2.1 -3)	24	24		
		Large (>3.1 or above)	52	52		
Annual income	Tk. in Thousand	Low (18-50.00)	26	26	76.73	36.89
		Medium (51-100.00)	39	39		
		High (above 100.00)	15	15		
Organizational Participation	Scoring Scale	No (0)	9	9	7.24	4.84
		Low (<5)	35	35		
		Medium (6-10)	27	27		
		High (>10)	29	29		
Extension Contact	Scoring Scale	Small (< 25)	32	32	29.05	7.54
		Medium (26-35)	44	44		
		High (>35)	24	24		
Cosmopolitaness	Scoring Scale	Low (< 19)	9	9	23.22	3.84
		Medium (20-25)	70	70		
		High (>25)	21	21		
Attitude towards technology	Selected Scoring Scale	Low (< 50)	20	20	56.48	5.6
		Medium (51-60)	57	57		
		High (>60)	23	23		
Innovativeness	Scoring Scale	No (0)	5	5	11.26	3.71
		Low (< 10)	33	33		
		Medium (11-14)	42	42		
		High (>14)	20	20		

Table 2. Improve practices of Pineapple Cultivation profile

Pineapple Cultivation Practices	Categories	Respondents Number	Respondents %	Mean	Standard Deviation
Use of improved Variety	Low use (1-2)	27	27	3.51	1.98
	Medium use (3-4)	49	49		
	High use (>4)	24	24		
Selection of Sucker	Low use (1-2)	27	27	3.23	1.145
	Medium use (3-4)	58	58		
	High use (>4)	15	15		
Recommended dose of fertilizer	Low use (7-8)	17	17	9.74	1.291
	Medium use (9-10)	61	61		
	High use (>10)	22	22		
Irrigation device	No use (0)	24	24	1.67	1.28
	low use (1-2)	50	50		
	Medium use (>3)	26	26		
Intercultural operation	Low use (2-3)	5	5	4.97	1.04
	Medium use (4-5)	49	49		
	High use (>5)	46	46		
Weed control technique	Low use (2-3)	10	10	4.66	0.99
	Medium use (4-5)	68	68		
	High use (>5)	22	22		
Plant protection Measurement	No use (0)	46	46	1.54	1.59
	low use (1-2)	18	18		
	Medium use (>3)	31	31		
	High use (>5)	5	5		

Table 3. Rank order of Selected Pineapple cultivation practices according to their use indices

Pineapple cultivation practices	Use index	Rank Order
Intercultural operation	241	1
Improved weed control technique	212	2
Recommended dose of fertilizer	205	3
Use of improved Variety	197	4
Selection of Sucker	188	5
Irrigation device	102	6
Plant protection Measurement	95	7

Use Index Pineapple Cultivation Practices of (UIPCP) = $P_n \times 0 + P_l \times 1 + P_m \times 2 + P_h \times 3$;
 Where, P_n = Percentage of the farmers having "no use", P_l = Percentage of the farmers having "low use", P_m = Percentage of the farmers having "medium use", P_h = Percentage of the farmers having "high use".

Relationships between the selected characteristics of the Pineapple farmers' with their use of improved practices in Pineapple cultivation: To ascertain the relationships between the selected characteristics of the

Pineapple farmers' with their use of improved practices in Pineapple cultivation, correlation analysis was used. Various relationships regarding the above aspects were depicted in Table 3.

Table 4 shows that education of the respondents had positive and significant relationship with the improved practices in pineapple cultivation. So it can be said that improved practices in pineapple cultivation of the respondents depends on their education. Education broadens one's outlook on life and helps to understand the social, political, economic and cultural issues in the society. The higher the educational attainment of an individual, higher was his/her level of understanding of any phenomenon. It is very important to note that 100% respondents of the study area were educated, considerable proportion 45% had secondary to higher secondary level

of education. This literacy of the respondents allowed them to have access to the print media which helped them

to cultivate the high valued crops like pineapple. Haque *et.al.*, (2004) and Alam (1998) also found similar result.

Table 4. Relationship between selected characteristics and improved practices in pineapple cultivation of the respondents

Selected Characteristics (Independent variables)	Computed 'r' Values	Tabulated 'r' values with d.f.98 (N=2)		
		0.05 level	0.01 level	0.001 level
Age	-0.110 NS			
Education	0.197*			
Farm Size	0.124 NS			
Annual income	0.223*			
Organizational Participation	0.111NS	0.196	0.257	0.324
Extension Contact	0.513***			
Cosmopolitaness	-0.104 NS			
Attitude towards technology	0.161NS			
Innovativeness	0.173NS			

NS = Not significant, *** = Correlation is significant at .01% level, ** = Correlation is significant at 1% level, * = Correlation is significant at 5% level

The relationship between farm size and improved practices in pineapple cultivation was found to be negative and no significant $r = 0.124NS$. It means that higher the farm size of the farmers had no significant relationship with their improved practices in pineapple cultivation. Inayetullah, (1962); Islam, (1971); Mannan, (1972); Sobhan, (1975); Ali, (1993), Bashar, (1993), and many others also found similar result. The annual income of the respondents on pineapple cultivation was found to have significant relationship ($r = 0.223*$) with the improved practices in Pineapple cultivation. This means that the annual income with their use of improved crop production practices has a great influence on improved practices in pineapple cultivation. Similar observations were also reported by several authors (Beal and Sibley, 1967; Thomson, 1968; Hossain, 1981; Singh, 1989). According to Table 4, the extension contact of the respondents showed a positive and significant relationship with their use of improved practices ($r = 0.513***$) in pineapple cultivation. This means that extension contact of the respondents towards pineapple cultivation has a great influence on their improved practices in pineapple cultivation. Pineapple is mainly a crop of hilly areas in Bangladesh. The concerned study area was also a hilly area, where no other crops are extensively and commercially grown. So, the respondents cultivated mainly pineapple and developed their improved practices in pineapple cultivation, which has a great impact on their increased income.

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