

Social Attributes of Young, Middle-aged and Old Sugarcane Farmers and their Effects on Adoption of Intercropping

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ABSTRACT

This study was undertaken to find out adoption variations across the age categories and different social attributes of farmers. Data was collected from different group of farmers by a pre-structured and pre-tested questionnaire. Individual characteristics of respondents' sugarcane farmers were profession, education, marital status, farm size, annual income, family size, housing condition, light-use, drinking water, sanitation, sleeping furniture and family structure. It was found that among all other professions, agriculture professionals had the highest adoption score. Respondent with graduate and above degree also had the highest adoption score. Similarly unmarried farmers, medium farmers, highest income group of all category farmers, higher family member groups, residents of pakka house, electricity users, respondents those had own tube well, sanitary latrine users, respondents those who slept on cot and combined family members had the higher adoption scores. Adoption trend according to attribute categories was found positive but not significant except farm size, which was found significant as per Friedman test. Young farmers had significantly the highest adoption score of 6.17 followed by middle-aged (5.95) and old farmers (5.35) against the possible score of 0-9.

Key words : Adoption, social attributes, age group, sugarcane farmer.

INTRODUCTION

Sugarcane is a long durational crop. It takes 12-14 months from planting to harvest. Farmers have to wait this long duration for its benefit. Intercropping is an economic approach of getting additional farm income and high agricultural production per unit area. Using intercropping technology, we can increase land equivalent ratio as well as net income (Rahman et al., 2005) from the same piece of land. Intercropping can give farmers interim benefit. So, increasing adoption of intercropping can make the farmer more interested to grow sugarcane. Bashar (2005) found that adoption of intercropping ranges from 3.8 to 100 against the possible range of 0 to 100. The average was 63.23 with a standard deviation of 25.14. On the other hand Pal (2001) found age was negatively co-related with adoption of new technologies of sugarcane production. Adoption of new technologies depends on farmers individual characteristics as well as characteristics of the technology (Rogers and Shoemaker, 1971). But no work has so far been done on effects of classified young, middle-aged and old sugarcane farmers individual group adoption of intercropping. Thus this study was undertaken to know the social attributes of young, middle-aged and old sugarcane farmers and their effect on adoption of intercropping.

MATERIALS AND METHODS

The study was undertaken at Bagatipara Upazilla under Natore Sugar Mills during July 2006. A pre-structured and pre-tested interview schedule was used as data gathering device.

Individual characteristics of sugarcane farmers were profession, education, marital status, farm size, annual income, family size, housing condition, light-use, drinking water, sanitation, sleeping furniture and family structure. Adoption score was determined on the basis of intercropping only. General rules of calculating adoption score was used as follows:

$$AS = A \times T$$

Where AS = Adoption score

A = Area (3 for using in 67 to 100% land, 2 for 34 to 66% and 1 for less than 33% land)

T = Time (technology used for 3 years or more = 3, 2 years = 2 and 1 year and less = 1)

Hence the possible scores of adoption were 0-9. Descriptive statistics, such as mean and percentage were used in describing the variables of the study. For exploring any association between the individual characteristics and adoption of 3 groups of respondents, Friedman test was used. Similarly to identify mean difference of individual characteristics and adoption of 3 groups of respondents Friedman test was also used (k-related sample).

RESULTS AND DISCUSSION

Data were analyzed and presented in tabular form. Individual characteristics of young, middle-aged and old sugarcane farmers are presented in Table-1. Among the respondents 30.71% were young (18-40), 19.51% were middle-aged (41-59) and 48.78% were old (60+). Respondents were also classified according to their other professions. These were agriculture 52.03%, business 13.82%, small business 5.69%, service 8.13%, retired 7.32%, labourer 4.07%, ricksha/van pullar 2.44% and dependent 6.50%. Most of the respondents' other professions were agriculture, business and service.

Most of the respondents (30.08%) had primary education next to that higher secondary (29.27%) and secondary education. About 9% respondents were illiterate and about 7% respondents were graduate & higher degree. In terms of education, young respondents were higher than that of their middle-aged and old counterparts.

About 94% respondents were married. Among them 45.53% were old, 29.27% were young and 19.51% were middle-aged. Only 2 young respondents were found unmarried, 4 old respondents were found widow/widower and one young respondent were divorced.

About 77.24% respondents were belonged to small farmers, among them 37.40% were old, 25.20% were young and 14.63% were middle-aged.

About 87.8% farmers annual income were upto 120,000 taka. They were equally divided in two groups. Only 13.01% farmers annual income were more than 121,000 taka.

Most of the respondents (53.66%) had medium sized family (4-6 family members), followed by small family (upto 3 family members) (30.89%) and large family (7 & above family members) (15.45%). Among young most of the respondents had upto 3 family

members but among old and middle-aged respondents most of them had 4-6 family members.

Most of the respondents (47.97%) had semi pakka house followed by katcha (29.27%) and pakka (22.76%) houses. In case of using light in their house about 92% respondents used electric light. Only 8.13% respondents used kerosine lamp in their house. About 75% respondents used drinking water from their own tube-well. Rest 25% depends on other tube-well for their drinking water. About 43.90% respondents used sanitary latrine followed by pit latrine (30.89%) and hanging latrine (25.20%).

In case sleeping furniture, chowki was found in most of the respondents (60.16%) house followed by cot 34.96%. About 5% respondents slept on floor. Most of the respondents (72.36%) had nucleus family followed by combined family (27.64%).

Table 1. Individual characteristics of young, middle-aged and old sugarcane farmers.

Characteristics	Young (18-40)	Middle-aged (41-59)	Old (60+...)	Total
1. Other Professions				
Agriculture	25 (20.33)	15 (12.20)	24 (19.51)	64 (52.03)
Business	04 (3.25)	06 (4.88)	07 (5.69)	17 (13.82)
Small business	02 (1.63)	03 (2.44)	02 (1.63)	07 (5.69)
Service	02 (1.63)	00	08 (6.50)	10 (8.13)
Retired	00	00	09 (7.32)	09 (7.32)
Labourer	03 (2.44)	00	02 (1.63)	05 (4.07)
Ricksha/Van pullar	03 (2.44)	00	00	03 (2.44)
Dependent	00	00	08 (6.50)	08 (6.50)
Total	39 (31.71)	24 (19.51)	60 (48.78)	123 (100)
2. Education				
Illiterate	00	01 (0.81)	10 (8.16)	11 (8.94)
Primary	04 (3.25)	03 (2.44)	30 (24.39)	37 (30.08)
Secondary	13 (10.57)	05 (4.07)	13 (10.57)	31 (25.20)
Higher Secondary	18 (14.63)	14 (11.38)	04 (3.25)	36 (29.27)
Graduate & Above	04 (3.25)	01 (0.81)	03 (2.44)	08 (6.50)
3. Marital Status				
Married	36 (29.27)	24 (19.51)	56 (45.53)	116 (94.31)
Unmarried	02 (1.63)	00	00	02 (1.63)
Widow/Widower	00	00	04 (3.25)	04 (3.25)
Divorced	01 (0.81)	00	00	01 (0.81)
4. Farm size				
Small farmer	31 (25.20)	18 (14.63)	46 (37.40)	95 (77.24)
Medium farmer	06 (4.88)	04 (3.25)	09 (7.32)	19 (15.45)
Large farmer	02 (1.63)	02 (1.63)	05 (4.07)	9 (7.32)
5. Annual Income (Tk)				
Upto 60,000	12 (9.76)	11 (8.94)	31 (25.20)	54 (43.90)
61,000-120,000	23 (18.70)	8 (6.50)	23 (18.70)	54 (43.90)
121,000+	4 (3.25)	6 (4.88)	6 (4.88)	16 (13.01)

Adoption among individual characteristics of the young, middle-aged and old respondents were also identified and presented in Table-2. It was found that among all other professions, agriculture professionals had the highest the adoption score in all groups followed by in business and retired people. Because, people those who depend on agriculture solely become more skill and efficient in farming which makes them more interested to adopt new technologies.

Respondent with graduate and above degree had the highest adoption score (6.97) followed by higher secondary group in all categories. Illiterate farmers had the lowest adoption score. This is justified because educated farmers become more interested to learn and adopt new technologies. However, this was not significant as per Friedman test. Unmarried farmers had the highest adoption score (6.7) followed by married (6.57) and divorced (6.2). It is because unmarried farmers are comparatively young and they can take risk easily than that of their other counterparts.

Medium farmers had the highest adoption score (6.3) followed by small farmers (6.10). It is because medium farmers and small farmers had to increase their production from their limited farm size. That is why they are forced to adopt new technologies. Large farmers are very busy to manage their farm. So they are reluctant to adopt new things. Highest income group of all categories had the highest adoption scores. Because sugarcane production is costly. It needs more input to adopt new technologies. However, this was not significant as per Friedman test.

Higher family member groups had higher adoption score followed by medium family member groups. Because improved agriculture activities need more manpower. Respondents lived in pakka house had more adoption score than that of their semi pakka and katcha counterparts. This is because farmers with high adoption ambition can earn more. Electricity users had more adoption score (6.03) than that of kerosine lamp users. Respondents those had own tube well had more adoption scores than the respondents who depend on others tube well. Similarly sanitary latrine users had higher adoption score (6.0) followed by pit latrine users (5.73) and hanging latrine users (5.4). Respondents those who slept on cot had the highest adoption score followed by them those who slept on chowki. Combined family members had the higher adoption scores than that of nucleus family members. Because combined family had more family members to work and supervise the farm. These characteristics are found common in progressive farmers who adopt new technologies more and fast. However, in this study the trend was positive but not significant. Except farm size, mean adoption scores of all other variables were not significant as per Friedman test.

Table 2. Adoption scores among individual characteristics.

Characteristics	Young (18-40)	Middle-aged 41-59)	Old (60+...)	Mean	Chi-square	sig
1. Professions						
Agriculture	7.2	7.1	6.3	6.87	2.138	0.343
Business	5.1	6.2	5.8	5.70		
Small business	5.8	5.7	4.8	5.43		
Service	5.6	00	3.9	3.17		
Retired	00	00	5.6	1.87		
Labourer	3.2	00	3.1	2.10		
Ricksha/Van pullar	3.2	00	00	1.07		
Dependent	00	00	5.2	1.73		
2. Education						
Illiterate	00	3.2	3.1	3.20	5.2	0.074
Primary	5.2	4.2	3.4	4.23		
Secondary	5.8	4.9	4.8	5.17		
Higher Secondary	7.5	6.2	5.2	6.30		
Graduate & Above	7.6	7.1	6.2	6.97		

Characteristics	Young (18-40)	Middle- aged 41-59)	Old (60+...)	Mean	Chi- square	sig
3. Marital Status						
Married	7.6	6.3	5.8	6.57	2.923	0.232
Unmarried	6.7	00	00	6.7		
Widow/Widower	00	00	5.6	5.6		
Divorced	6.2	00	00	6.2		
4. Farm size						
Small farmer	6.3	6.2	5.8	6.10	6.00	0.05
Medium ..	6.8	6.4	5.7	6.30		
Large ..	6.1	5.9	5.8	5.93		
5. Annual Income						
Upto 60,000	5.8	5.6	6.1	5.83	2.00	0.368
61,000-120,000	6.2	5.9	5.8	5.97		
121,000+	7.2	6.6	6.2	6.67		
6. Family Size						
Upto - 3	6.2	6.1	5.8	6.03	2.00	0.368
4 - 6	6.5	6.3	5.9	6.23		
7 - and above	00	6.8	6.1	4.30		
7. Housing condition						
Katcha	5.9	5.3	4.9	5.37	4.91	0.086
Semi-pakka	5.6	5.6	4.9	5.37		
Pakka	6.1	6.2	5.3	5.87		
8. Light-use						
Electricity	6.2	6.1	5.8	6.03	3.714	0.156
Kerosine lamp (Harricane)	6.1	6.1	5.3	5.83		
9. Drinking water source						
Own Tube well	6.1	5.9	5.9	5.97	3.00	0.223
Other Tube well	5.8	5.8	5.4	5.67		
10. Sanitation						
Sanitary Latrine	6.2	5.9	5.9	6.00	3.818	0.148
Pit latrine	6.1	5.8	5.3	5.73		
Hanging latrine	5.7	5.8	4.7	5.40		
11. Sleeping furniture						
Cot	6.1	6.1	6.1	6.10	3.00	0.223
Chowki	5.8	5.4	5.8	5.67		
Floor	5.7	5.1	5.1	5.30		
12. Family structure						
Combined	6.2	6.1	5.6	5.97	4.00	0.135
Nucleus	6.1	5.8	5.2	5.70		

Mean adoption scores between young, middle-aged and old sugarcane farmers were also identified and presented in Table-3. It was found that young farmer (6.17) had highest adoption score followed by middle-aged (5.95) and old farmers (5.35). This was found significant as per Friedman test. This is justified. Many authors also reported the similar findings (Haque *et al.*, 2006, Pal *et al.* 2001).

Table 3. Differences of adoption scores between young, middle-aged and old sugarcane farmers.

Characteristics	Young (18-40)	Middle-aged (41-59)	Old (60+...)	Friedman test chi-square	sig
Professions	6.22	6.70	5.51	10.50	0.005
Education	6.70	5.59	3.91		
Marital Status	7.52	6.30	5.79		
Farm size	6.12	5.34	4.61		
Annual Income	5.56	6.18	5.99		
Family size	6.28	6.29	5.95		
Housing condition	5.81	5.58	5.00		
Light use	5.72	6.10	5.76		
Drinking water source	6.02	5.89	5.17		
Sanitation	6.08	5.85	5.34		
Sleeping furniture	5.91	5.59	5.87		
Family Structure	6.14	5.96	5.24		
Mean	6.17	5.95	5.35		

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