J. Agrofor. Environ. 4 (1): 171-174, 2010 ISSN 1995-6983

Date palm cultivation in Jessore district: the scenario of past and present

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Abstract: The main purpose of the study was to know the past and present condition of date palm cultivation as well as its conservation in Jessore district of Bangladesh. Data were collected by using a structured interview schedule. Appropriate scales were developed in order to measure the variables. Correlation test was used to ascertain the relationship between the concerned dependent and independent variables of the study. At present only 26% households possess more than 10 trees; while 10% households do not possess any date palm trees and 64% possess less than 10 trees. The mean of date palm trees at present per household in the area is 11.13, but it was 50.92, 128.5 and 143.08 , respectively before 10, 20 and 30 years ago. Now-a-days 17.5% respondents collected juice himself, 13.6% by share, 28.8% by gachi and 36.3% respondents do not collect juice. Among the respondents, 97.9% use dead leaves and straw as fuel for juice processing which they get free of cost. The mean of income per date palm tree per season was Tk.135.53; while the mean of expenditure per date palm tree per season was Tk. 89.97. So it demands attention to conserve this plant, as it is a profitable traditional agroforestry practice.

Key words: Date palm, cultivation status, past and present scenario.

Introduction

Date palm is an important plant species that constitute the traditional agroforestry system in the greater Jessore region (Abedin *et.al*., 1997). Akter *et al.* (1988) conducted a survey in the farming system research site, Bagherpara, Jessore to understand the existing agroforestry situation and mention it as a highly profitable farming practice. Date palm is an evergreen plant. It plays a vital role in environmental and ecological balance. It helps to mitigate natural disaster. It also acts as a barrier against storm, cyclone and other natural calamities. It also withstands both waterlogged condition and drought. The leaves can be chopped and mix with straw to use as feed for the cattle during flood time. A significant amount of sugar uses can be reduced by the substitution of gur. Moreover, date palm is also an important source of fuel for household. Recently it is widely used in brick-kilns. There is a great use for mat making and building material and in other handicrafts manufacturing. It also acts as insurance to the farmers during the time of their economic hardship. Jessore is one of the districts where date palm cultivation is practiced in a large scale by the communities for a long time but now-a-days the date palm cultivation in that area has drastically been reduced. It is an important crop but no research have been carried out to found out the reasons of reduction of date palm trees, what was its past cultivation status, present cultivation status and what will be happen in future if attention is not given to it. Considering the above facts, the study was conducted to determine the past and present status of date palm cultivation; and to identify the problems and opportunities of date palm cultivation in order to conserve this plant.

Materials and Methods

The study was conducted in two upazilas- Monirampur and Keshabpur of Jessore district. Among the two upazila-Durbadanga and Kultia union from Monirampur Upazila and Panjia and Sufalakati union from Keshabpur Upazila were selected for this study. From each union four villages viz. Shyamnagar, Harina, Bajitpur and Jhikordanga from Durbadanga Union, Kultia, Alipur, Poradanga and Lokhidanga from Kultia union, Panjia, Pathorghata, Garvanga, and Bagdanga from Panjia union, Sufalakati, Kanaidanga, Kakbadhal and Dohere from Sufalakati union were selected. Data were collected from 80 randomly selected households taking 5 from each of the selected village with the help of a pre-structured questionnaire during the month of January 2009 and from August to October 2009. Age, education, family size, farm size, annual income, occupation and major crops cultivated were the independent variables; while present status of date palm cultivation by the farmers was the dependent variable in this study. During data collection information on past and present number of date palm, health condition, juice collection, processing, fuel wood use, income and expenditure from date palm were recorded. The independent variables were measured following appropriate scales; while the dependent variable was measured in terms of number of date palm trees of the respondents have at present and what had before 10, 20 and 30 years ago, health condition of the tree in different times, juice production, processing, income and expenditure from date palm and other relevant information related to date palm cultivation.

Results and Discussion

Characteristics of the respondents: Age of the respondents ranged from 38 to 78 years, the average being 55.71. On the basis of range of age, the respondents were classified into three categories as presented in Table-1. The highest proportion (43.8 %) of the respondents fell in the age category of 40-50 years, 13.8% fell below 40 years and 42.5% were above 50 years old. The education score of the respondents ranged from 0 to 15. Based on education, the participants were classified into four categories. Among the respondents, 21.3% were illiterate, 40.0% completed primary education, 17.4% completed secondary education, 6.3% completed higher secondary education and 15.0% were graduate. The family member of the respondents varied from 2 to 13 with an average of 7.13. Based on the number of family members, the respondents were divided into three categories such as small, medium and large. Data presented in the Table -1 indicated that 78.8% of the respondents belonged to the medium family category compared to 18.8% who belonged to small family category and 2.4 % to large family category. Farm size of the respondents varied from

0.097 to 5.12 hectare (ha). The average farm size was 1.53 ha. The respondents were classified into three categories as followed by DAE (1995) in the Table 1. The highest proportion 85% of the participants had medium farm compared to 12.5 % had large farm and 2.5 percent having small farm. The annual income of a respondent was determined by adding his income from (crop, vegetables, tree, cattle, poultry, fisheries, business, job, and other sources) during a year. The income was expressed in Taka. The range of annual income was (Tk.30000 to 211500) with an average of Tk.78708.75. Based on annual income, highest proportion 62.5 % of the respondents had medium annual income compared to 25 % as high income group and 12.5 % under low income group.

Table 1. Farmers' characteristics treated as independent variables of the study

Characteristics	Category	Range		Mean	Respondent %
		Minimum	Maximum		
Age(years)	<40	38	78	55.71	13.8
	40-50				43.8
	>50				42.4
Education(years)	Illiterate	0	15	5.6	21.3
	Primary education (1-5)				40.0
	Secondary education (6-10)				17.4
	Higher secondary education (12)				6.3
	Graduate (15)				15.0
Family size(No.of people)	Small family (up to 5)	2	13	7.13	18.8
	Medium family (5-10)				78.8
	Large family (above 10)				2.4
Farm size (ha.)	Small farm (up to 1 ha.)	0.097	5.12	1.53	2.5
	Medium farm (1.05-1.88 ha.) acre)				85.0
	Large farm (above 1.88 ha.)				12.5
Annual income(000Tk.)	Low income (up to Tk.50000)	30	211.5	78.70	12.5
	Medium income (Tk.50500-150000)				62.5
	High income (above Tk. 150000)				25
Occupation	Agriculture				75.0
	Business				5.0
	Service				18.8
	Others				1.2

Table 2. Distribution of number of date palm trees of the respondents in different years

Categories on the basis of number of date palm trees	At present time		Before 10 years		Before 20 years		Before 30years	
	No. of respondents	%	No. of respondents	%	No. of respondents	%	No. of respondents	%
0	8	10.0	-	-	-	-	-	-
1-09	51	64.0	-	-	-	-	-	-
10-19	11	13.8	4	5.0	-	-	-	-
20-39	10	12.2	41	51.2	1	1.3	-	-
50-59	-	-	35	43.8	-	-	-	-
60-99	-	-	-	-	45	56.3	37	46.2
100-150	-	-	-	-	34	42.4	19	23.8
>150	-	-	-	-	-	-	24	30.0

Table 3. Comparison of date palm cultivation of the respondents in different years

Time	Range		Mean	Standard deviation
	Minimum	Maximum		
At present	0	60	11.3	14.03
Before 10 years	15	150	50.92	31.61
Before 20 years	20	400	128.05	83.75
Before 30years	35	650	143.08	99.97

Date palm trees of the respondents in different years: Respondents had different number of date palm trees in different years. Respondents' category on the basis of number of date palm trees were presented in the Table 2. At present 10.0% respondents do not have any date palm tree whereas 64.0%, 13.8% and 12.2% respondents have 1 to 09, 10 to 19 and 20 to 39 number of date palm trees respectively. Before 10 years 5.0%, 51.2% and 43.8% respondents had 10 to 19, 20 to 39 and 50 to 59 number of date palm trees respectively. Before 20 years 1.3%, 56.3% and 42.4% respondents had 20 to 39, 60 to 99 and 100 to 150 number of date palm trees respectively. Before 30 years 46.2%, 23.8% and 30.0% respondents had 60 to 99, 100 to 150 and more than 150 number of date palm trees respectively. The scenario of distribution of date palm trees recorded in the present study corroborates the results of Abedin *et. al* (1988) who observed the distribution of date palm along with some other multipurpose trees and reported that date palm is a major species grown in the crop field and it is in declining condition. Abedin *et. al.* (1998) also reported date palm often found on the higher parts, particularly on plot boundaries which constituted the traditional cropland agroforestry systems in the Ganges flood plain region of Bangladesh. Data presented in the Table 3 indicated that reduction of date palm trees have occurred in the recent decades. Respondents had high amount i.e. number of date palm trees before 20 to 30 years ago as compared to recent decades. The mean of number of date palm trees of each respondent is about 11 whereas it was about 51, 128, and 143 before 10, 20 and 30 years ago respectively. Kamaluddin *et. al.* (1998) also observed similar reduction; while they conducted survey on distribution of date palm in the rural landscape of Bangladesh. Dutta and Iftekhar (2004) identified the cause of reduction of date palm as the salinity intrusion in the greater part of Satkhira region. The declining trend of date palm trees in the present study also identified salinity problems in different parts of the study areas.

Table 4. Income and expenditure from date palm cultivation

Categories (TK. /Season)	Income		Expenditure	
	Frequency	%	Frequency	%
<1000	-	-	29	54.7
1000-2000	-	-	14	26.4
>2000	-	-	10	18.9
<1500	32	59.3	-	-
1500-3000	12	22.2	-	-
>3000	10	18.5	-	-

Categories (TK./Plant /Season)	Income			Expenditure		
	Frequency	%	Mean (Tk.)	Frequency	%	Mean (Tk.)
<100	18	33.3		36	69.2	
100-200	32	59.3	135.53	15	28.8	89.97
>200	4	7.4		1	2.0	

Table 5. Co-efficient of correlation (r) between dependent variables and selected characteristics

Independent Variables	Dependent Variable Past and Present Status of Date palm Cultivation in Jessore District	
	Co-efficient (r) value	Level of significance
Income	0.50	**
Age	0.22	NS
Education	0.263	*
Family size	0.340	*
Residential area	0.515	**
Cultivable land	0.818	**
Waste and Uncultivated land	0.714	*
Total land	0.827	**

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

Income and expenditure from date palm cultivation
The farmers used their unused labour during the season. They processed the juice and earned money. They had some expenditure for different purposes such as buy the juice pot, paid the gachi, fuel wood and so on. Income and expenditure from date palm cultivation were presented in the Table 4. It indicated that expenditure of 54.7% respondents is less than Tk.1000 in a season whereas 59.3% respondents' income is more than Tk.1000 in a season. Expenditure of 26.4% respondents is Tk.1000-2000 whereas 22.2% respondents' income is Tk.1500-3000 in a season. Expenditure of 18.9% respondents is more than Tk.2000 whereas 18.5% respondents' income is more than Tk.3000 in a season. It also indicated that 69.2% respondent's expenditure is less than Tk. 100 per plant per season whereas 59.3% respondent's income is more than Tk.100 per plant per season. Expenditure of 2.0% respondents is more than Tk. 200 per plant per

season whereas 7.4% respondent's income is more than Tk.200 per plant per season. The mean of income per date palm tree per season is Tk.135.53 whereas expenditure per plant per season is Tk. 89.97. It is, therefore, a profitable farming practice. Nixon and Wedding (1956) reported that besides juice production, date palm produces approximately 100 to 125 green leaves with an annual formation 10 to 26 new leaves which makes the plant highly economic and profitable.

From the study, it appears that the mean of date palm trees in the present time is 11.13, but it was, respectively 50.92, 128.5 and 143.08 before 10, 20 and 30 years ago. Serious reduction of the plant has occurred in the present time as compared to past. If this situation is continued, the tree will be disappeared completely within few years. In our country, very little attention has paid for the systematic cultivation of date palm for better yield. A significant economic return is possible from the cultivation of date palm. So, it is necessary to conserve the plant for both economic and ecological view point.

References

Abedin, Z., Akhter, S, Haque, F., Alam, A., Washington, D., Uicken, M.K.G., Sastry, C.B. and Adams, N.R. 1988. Uses of multipurpose trees of the small farms of the low rainfall Ganges floodplain soils of Bangladesh. Proceedings of the Intl. Workshop, Nov. 2-5, 1987, Pattaya, Thailand.

Akter, M.S., Haque, M.F. and Abedin, M.Z. 1988. Survey on existing agroforestry systemsat FSR site, Bagherpara, Jessore. Res. Rep. (1987-1988), OFRD Reg. Agric. Stn., Jessore BARI, GAzipur.

Dutta, A.K.and Iftekhar, M.S. 2004. Tree species survival in the homestead forests of salt affected areas: a perception analysis for Bangladesh. J. Bio.Sci., 4(3): 309-313.

Kamaluddin, M., Nath, T.K. and Jashimuddin, M. 1998. Indigenous practice of Khejur palm (*Phoenix sylvestris*) husbandry in rural Bangladesh. Journal of Tropical Forest Science (Malaysia 10(3): 357-366.

Nixon, R.W. and Wedding, R.T. 1956. Age of date leaves in relation to efficiency of photosysthesis. Proc. Amer. Soc. Hort. Sci. 67: 265-269.