Students' Perception Regarding Agroforestry and Global Warming

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Abstract

The paper highlights perception of the students of Patuakhali Science and Technology University (PSTU) regarding agroforestry and global warming. Attempt was made to assess the variation in perception among the students of three faculties. The study also explored the relationship between selected individual characteristics of students and their perception regarding agroforestry and global warming. Data were collected from 120 students following stratified sampling. Highest proportion (55.83%) of the students belonged to moderate perception category while 21.67% had poor perception and only 22.5% students had high perception regarding agroforestry and global warming. The students of agriculture perceived better than the students of CSE and BAM faculty regarding agroforestry and global warming. Level of education, academic achievements, information media used, knowledge on environment and awareness were positively correlated with the perception of the students regarding agroforestry and global warming.

Keywords: *Perception, agroforestry and global warming.*

Introduction

Global warming is the gradual increase in global temperatures caused by the emission of gases that trap the sun's heat in the Earth's atmosphere. Global warming is caused by the build up of greenhouse gases in the atmosphere such as carbon dioxide and methane, which form a sort of blanket over the Earth, trapping in heat that would normally escape the atmosphere. Global warming is interrelated with ozone layer depletion, acid deposition, tropical deforestation, desertification, pollution problems in developing countries, endangered species, marine pollution, and trans-boundary movement of hazardous wastes and is a major global environmental issues. There have been predictions, and some evidence, that global warming might cause loss of carbon from terrestrial ecosystems, leading to an increase of atmospheric CO_2 levels. Several climate models indicate that global warming through the 21st century could be accelerated by the response of the terrestrial carbon cycle to such warming (Cox *et al.,* 2000). The negative impact of global warming like rise of sea level would threaten coastal countries like New Zeeland, Maldives, Bangladesh and part of India (De, 2000).

Agroforestry, the sustainable environmental friendly land use system plays an important role in reducing global temperature. Agroforestry is the deliberate incorporation of trees and other woody species of plants

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into other types of agricultural activities. By definition the use of woody species must result in the enhancement of either the biological productivity or the economic return of the system, or both (Cornell and Michelle, 2007). Agroforestry practice increase the total green area, check the carbon dioxide emission and check green house effect as well as global warming. The significant ecological effects of agroforestry practices have been considered as more important than the potential agricultural and economic benefits. However, agroforestry practice is existed more or less every where of the country though in a limited basis but very few of common people are recognized with the system and its significance. Hence, perception assessment of both agroforestry and environment should be started from educator-learner to common people of the country.

Objectives of the study:
i)   To ascertain perception of the PSTU students regarding agroforestry and global warming;
ii) To assess the variation in the perception among the students of three faculties in PSTU;
iii) To determine and describe the individual characteristics of the PSTU students; and
iv) To explore relationship between the selected individual characteristics and their perception regarding agroforestry and global warming.

Methodology

Sources of data

The study was conducted in Patuakhali Science and Technology University (PSTU). Data were collected from the students of three faculties *viz*. Agriculture, Computer Science & Engineering (CSE) and Business Administration and Management (BAM). Thirty students were taken from each of four undergraduate level following stratified sampling technique. Hence, the sample size was 120. Data were collected using a pre-tested structured questionnaire during 1 May 2008 to 30 May 2008. Finally, the raw data were compiled and tabulated to make it suitable for statistical analysis. SPSS package (11.5 versions) was used for data entry. Frequency distribution, percentage, mean, standard deviation, correlation analysis, t-test etc. were employed to interpret the data.

Variables of the study and their measurement

In the present study, five selected individual characteristics of the students such as their level of education, academic achievements, knowledge on environment, information media used for gaining knowledge and awareness concerning global warming and agroforestry were considered as the independent variables. Rated scoring method was used for measuring independent variables. On the other hand, perception of the students regarding agroforestry and global warming was the dependent variable of the study. A five point Likert scale of fifteen items (statements) was constructed following Chakraborty (2002) and Haque and Usami (2005) for measuring students' perception score. A student was asked to indicate his extent of agreement and disagreement in respect of 15 statements.

Each respondent expressed his extent of agreement by checking against any of the following five responses.

Responses	Weight for positive response	Weight for negative response
Strongly agree	4	0
Agree	3	1
Undecided	2	2
Disagree	1	3
Strongly disagree	0	4

Perception score of a respondent regarding agroforestry and global warming was obtained by adding together scores on all 15 statements. Thus, the perception score of a respondent varied from 0 to 60 where 0 indicates no perception and 60 indicates highest level of perception regarding agroforestry and global warming.

Findings and Discussion

Some basic features of individual characteristics

Data attained concerning the individual characteristics of the PSTU students show that majority (49.16%) of the students had good academic achievement while 29.17% had very good and 21.67% had moderate academic achievement respectively. Highest proportion (53.33%) of the students possessed moderate knowledge on environment while 26.67% possessed high knowledge and only 20% possessed poor knowledge. About 59.16% of the students were medium media user where 21.67% were low media user and only 19.7% students were high media user. Most of the students (51.67%) had high awareness while 25% had low awareness and only 23.33% had a medium awareness regarding agroforestry and global warming (Table 1).

Perception of the PSTU students regarding agroforestry and global warming

The possible perception score of the students regarding agroforestry and global warming ranges from 0 to 60. However, the observed perception score ranges from 27 to 60 with an average of 46.67 and standard deviation 7.25. The findings indicate that highest proportion (55.83%) of the student belonged to moderate perception category while 22.5% had high perception and 21.67% students had poor perception regarding agroforestry and global warming (Table 2).

Table 1. Salient features of individual characteristics of the PSTU students

Selected characteristics	Categories	Respondent		Scoring method	Range		Mean	SD
		No.	%		obtained	Possible		
Level of education in B. Sc (Hon's.)	Level-1(13)	30	25	Year of schooling	13	16	14.49	1.11
	Level -2 (14)	30	25					
	Level-3 (15)	30	25					
	Level-4 (16)	30	25					
Academic achievements	Moderate (6.0-8.0)	26	21.67	Rated score (CGPA)	6.9 -10	5-10	8.60	.74
	Good (8.1-9.0)	59	49.16					
	Very good (> 9.0)	35	29.17					
Knowledge on environment	Poor (4-18)	24	20.00	Rated score	4 -30	0-30	22.74	5.25
	Moderate (19-27)	64	53.33					
	High (> 27)	32	26.67					
Information media used	Low (2-11)	26	21.67	Rated score	2 -27	0-27	14.73	4.19
	Medium (12-18)	71	59.16					
	High (> 19)	23	19.17					
Awareness about global warming and agroforestry	Low (2- 20)	30	25.00	Rated score	2 -30	0-30	22.64	3.91
	Medium (21-25)	62	51.67					
	High (> 25)	28	23.33					

Table 2. Distribution of PSTU student according to perception regarding agroforestry and global warming

Category	Respondent students		Score range		Mean	SD
	No.	%	Obtained	Possible		
Poor perception (27-41)	26	21.67	27-60	0-60	46.67	7.25
Moderate perception (42-52)	67	55.83				
High perception (> 52)	27	22.50				
Total	120	100				

For better understanding, students' responses for all the statements of perception were analyzed by their number of citations and statement wise perception sore and mean value. The mean value was measured as dividing the perception score of each statement by the number of respondents. It was found that positive statements had higher mean values than that of negative statements. This implies that PSTU students perceived agroforestry and global warming in a positive way (Table 3).

Relationship between selected individual characteristics and perception of PSTU students regarding agroforestry and global warming

The findings demonstrated that level of education, academic achievements, information media used, knowledge on environment and awareness about agroforestry and global warming were positively correlated with perception of the students regarding agroforestry and global warming (Table 4).

Table 3. Students' perception to individual statement regarding agroforestry and global warming with their perception score (PS) and ranking

Statements	Extent of perception					PS	Mean
	SA	A	UD	D	SD		
(+) 1. Agroforestry is a sustainable land use system.	65	38	13	3	1	403	3.36
(-) 2. Small plants like crops, grasses etc has no role in reducing global warming.	5	17	22	32	44	333	2.78
(-) 3. There is no significant effect of agroforestry practice in reducing global warming.	5	3	13	27	72	398	3.32
(+) 4. Planting trees is a way of reducing global warming.	95	16	6	1	2	441	3.68
(+) 5. Planned industrialization can minimize global warming.	52	39	17	4	9	360	3.0
(-) 6. Only the large trees can minimize temperature of the earth.	2	12	30	53	23	323	2.69
(-) 7. Only industrialization is responsible for global warming not the deforestation.	7	8	16	29	60	367	3.06
(+) 8. A country should possess adequate forest coverage for sustainable environment.	82	24	8	3	3	419	3.48
(-) 9. Global warming has positive impact in Bangladesh.	13	10	21	13	63	343	2.86
(+) 10. Phytoplankton plays an important role in reducing global warming by absorbing CO_2	34	43	31	9	3	336	2.8
(+) 11. Green house gases are one of the cause of global warming.	75	18	17	7	3	395	3.29
(-) 12. Global warming is beneficial for temperate country.	6	11	23	42	38	335	2.79
(+) 13. Global warming can be checked by reforestation, agroforestry and organic farming.	59	38	18	3	2	359	2.99
(-) 14. Transportation and power plant has no influence on global warming.	2	7	30	38	43	353	2.94
(+) 15. A global movement is needed to stop global warming where the developed countries should take this initiative.	79	30	6	2	3	420	3.5

Notes: SA=Strongly Agree, A= Agree, UD= Undecided, D= Disagree, SD= Strongly Disagree, PS= Perception Score

Education facilitates individuals to gain knowledge and thus increases their power of understandings. Consequently, their outlook is broadened and horizon of knowledge is expanded. The real and outer world is exposed to an educated man and he can gain various experiences for perceiving a thing better. That's why with the increase of level of education perception score increased. Chintawar (1997) also found similar relationship between education and perception in his study.

Table 4. Co-efficient of correlation between the dependent and independent variables

Individual characteristics of PSTU student	Correlation coefficient (r)
Level of education	0.220^{*}
Academic achievements	0.180^{*}
Information media used	0.982^{**}
Knowledge on environment	0.615^{**}
Awareness about agroforestry and global warming	0.487^{**}

* = Significant at the 0.05 level and ** = Significant at the 0.01 level

Academic achievements and perception of the students were positively correlated. This implies that for achieving better academic performance one had to better perception capacity. Information media use, knowledge and awareness are interrelated with each other and has a cumulative effect on perception of individual. The student who uses more information media can learn many unknown things, gathered various knowledge and experiences and become aware about the threat and opportunities concerning the modern issues like agroforestry and global warming. On the other hand knowledge and media exposure stimulates the sense organ hence individual perceive better. Islam (2001) also found similar relationship between knowledge and perception of the farmers in his study.

Perception variations among the students of three faculties of PSTU regarding agroforestry and global warming

A comparison was made between the students of agriculture and CSE faculty regarding the perception about agroforestry and global warming. The mean perception score of the students of agriculture faculty was 50.48 and standard deviation was 5.53. On the other hand the mean perception score of the students of CSE faculty was 43.90 and standard deviation was 6.44. The mean perception score shows that the students of agriculture faculty perceived better than the students of CSE about agroforestry and global warming. As agricultural is a natural and biological science hence the perception of the student of agriculture faculty was better. This finding is further supported by the significant t value at 39 degrees of freedom (Table 5).

Table 5. Difference in the perception between the students of Agriculture and that of CSE
faculty of PSTU

Category	Agriculture				CSE				t-value
	No.	%	Mean	SD	No.	%	Mean	SD	with 39 df
Poor perception	7	17.5			6	15			
Moderate perception	12	30.0	50.48	5.53	13	32.5	43.90	6.44	4.26^{**}
High perception	21	52.5			21	52.5			
Total	40	100			40	100			

** = Significant at the 0.01 level

Similarly, a comparison was also done between the students of agriculture and BAM faculty. The mean perception score

shows that the students of agriculture perceived better than the students of BAM about agroforestry and global warming. The

difference is additionally supported by significant t value (2.56) at 39 degrees of freedom (Table 6).

For easy and quick understanding about the perception and perception of the PSTU students a column graph is presented in Figure 1.

Table 6: Difference in the perception between the students of Agriculture and that of BAM faculty of PSTU

Category	Agriculture				BAM				t-value
	No.	%	Mean	SD	No.	%	Mean	SD	with 39 df
Poor perception	7	17.5			10	25			
Moderate perception	12	30.0	50.48	5.53	6	15	45.63	8.01	2.56*
High perception	21	52.5			24	60			
Total	40	100			40	100			

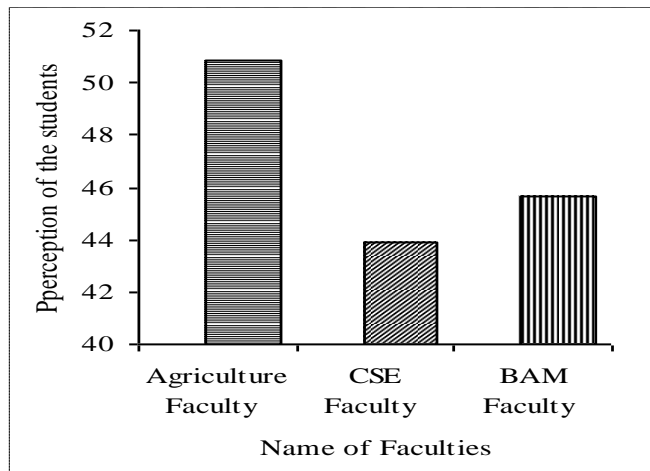** = Significant at the 0.05 level*

Figure 1: Comparative perception among the students of PSTU about global warming and agroforestry

Conclusion

Global warming is one of the important issues at present time. It is actually a global crisis. So, everybody of us have to be conscious about global warming and its sustainable measure. Agroforestry is one of the important sustainable practice which reduce global warming. But the concept of agroforestry is not properly established among the common people. Only a few educated persons have concept about the significance of agroforestry. However, perception of the students regarding agroforestry and global warming in such a university level was not satisfactory. A great share of them lacks adequate knowledge and perception regarding agroforestry and global

warming. This finding indicates the worst condition of environmental knowledge of the mass people out side the high level academics. The students of agriculture perceived better than the students of CSE and BAM faculty of PSTU. Hence, it can be recommended that extension of environmental education is necessary even at the university level. All university and its disciplines should incorporate necessary environmental education to their curriculum. After strengthening, all universities can take environmental knowledge extension projects for surroundings as well as global development.

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