

## Organic waste utilization pattern in 'Char Gubudia' village of Mymensingh

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**Abstract:** Char Gubudia village of Mymensingh Sadar Upazila under Mymensingh was selected as locale of the study. Twenty households among four farming categories viz. medium, small, marginal and landless were interviewed using an interview schedule to observe the farmer socio-economic condition and utilization pattern of organic waste and the effect of organic waste on farm environment. Data for organic wastes were obtained through personal contact during October 2005 to March 2006. There were 195 households in Char Gubudia village consisting of 975 populations with an average of 5 persons per family. Household waste, kitchen waste, cow dung and ashes were 0.517, 0.0555, 1.290 and 0.412 ton per year, respectively. The total organic waste production was unequally proportionate among medium, small, marginal and landless farming community. The total organic waste production in the farming community was 14.032 ton per year where the total utilization of organic waste was 13.251 ton per year in Char Gubudia village. The farmers of the study area properly managed and utilized the existing organic waste for better economic return and environmentally sound sustainable agriculture.

**Key words:** Organic waste, Management, Utilization, Environment

### Introduction

Organic waste is produced wherever there is human habitation. The main forms of organic waste are household food waste, agricultural waste, human and animal waste. Unmanaged or mismanaged land utilization of organic waste has resulted in a variety of aesthetic and environmental problems (McHarry, 1993). Many of these problems developed due to lack of a clear understanding of the waste-environment concerns for safely assimilation of organic waste materials. In addition to the more common concerns about adverse effects on our environment, the effects of organic waste disposal on groundwater quality is an especially urgent problem for the surrounding environment (Muchovej and Obreza, 2004). There are a variety of ways for utilization of organic waste and in this technical brief we hope to outline a few of the principle methods used for putting it to good use. The three main ways of using organic waste that we look at are for soil improvement, for animal raising and to provide a source of energy (Flynn *et al.*, 2001; Karekezi and Ranja, 1997; Lardinois, 1993; Guttentag, 2002). Organic waste can be used for soil nutrients, increasing crop yield and fertility & productivity of soil. Organic waste even relatively low in available nutrients can provide valuable organic matter to soil, thereby improving permeability and water holding characteristics. Cured organic waste can be marketed as an amendment to improve soil productivity, as a component in potting soil, or as mulch for landscaping, gardening etc. If high temperatures have been maintained in the processed organic waste, the organic waste will be relatively free of weed seeds, insects, and pathogens compared to untreated organic wastes (Porter, 1995). Organic waste is a significant and growing problem in many urban and rural areas of Bangladesh where current waste management systems are rudimentary at best and often ineffective. Uncontrolled disposal of organic waste causes a range of external cost, including human health hazards in Bangladesh. Promoting the concept of organic waste as a resource, the problem of organic waste management and utilization in Bangladesh are tackled easily and step by step. This task is confirmed by developing a network of decentralized and financially self-sufficient composting plants adapted to the local context, including the scarcity of rural land. City Corporation, NGOs, CBOs (community

based organizations) and private companies are involved for collection, disposal and recycling of municipal solid wastes (DOE 2006). Recently, Ministry of Environment and Forest with the support of UNDP initiated a community based decentralized composting project in Dhaka. The prime goal of this project was to explore technical and commercial feasibility of labor intensive aerobic decentralized composting technique and to promote the principle of 4Rs (Reduce, Re-use, Recycle, and Recovery of waste) in urban areas of Bangladesh (DOE 2004). Nobody pay attention for waste management in rural areas. Though wastes originated from rural areas have more potential to make compost. Keeping this view in mind, the present investigation has been under taken to study the management utilization pattern of organic waste material in a village in relation to environment

### Materials and Methods

Char Gubudia village of Mymensingh Sadar upazila was purposively selected as the locale to investigate the management and utilization of organic wastes. The total numbers of 450 households were considered as population while 20 households were selected following random sampling method. Data were collected during October 2005 to March 2006 from the selected respondents using pre-tested and structured interview schedule. The variables such as age, education, occupation and farm category were measured through units of years, years of schooling, main income source and number of members, respectively. Organic waste production and management in relation to the farm crops, household waste, kitchen waste, cowdung and ash were measured through proper farming management techniques. In the study, utilization of organic waste was estimated through use of fuel, organic fertilization, sale in local market and land fill purposes. After completion of the field survey, the information obtained from all the respondents were coded, compiled, tabulated and analyzed according to the objectives of the study. Local units were converted into standard units.

### Results and Discussion

**Characteristics of the respondents:** A summary of four selected characteristics of the respondents has been presented in Table 1. In order to avoid complexity, only percentage and standard deviations of the variables have been shown in the Table 1.

**Table 1. Salient features of the selected characteristics of respondents**

Characteristics	Measuring Unit	Categories	Per cent	SD
Age	Years	Young (25-35)	15	3.214
		Middle (36-46)	40	
		Old (>47)	45	
Education	Level of schooling	Illiterate	25	2.943
		Primary	30	
		Secondary	40	
		Above secondary	5	
Occupation	Main income source	Agriculture	39	3.994
		Business	16	
		Labor	6	
		Job	3	
		Agriculture & business	23	
		Agriculture & Labor	10	
		Agriculture & Job	3	
Farm category	Number	Landless	35	1.825
		Marginal	30	
		Small	15	
		Medium	20	

**Livestock category:** The highest number of cow, heifer, calf, hen and cock were found in small category households while ox and bullock were found in medium size households (Table 2). On the otherhand, maximum number of bullock and duck were found in marginal size family.

**Table 2. Total livestock count of farming people of Char Gubadia village**

Category	Ox	Bullock	Cow	Heifer	Calf	Duck	Hen	Cock
Landless	0	1	5	5	2	11	23	7
Marginal	1	5	5	5	1	26	24	8
Small	0	4	11	6	5	25	42	14
Medium	3	5	7	4	2	16	17	3

**Production of organic waste:** Medium size farm produced highest amount of cowdung, ash and homestead wastes whereas maximum amount of the kitchen waste produced by small households (Table 3).

**Table 3. Production of organic waste from different farming categories of Char Gubudia village**

Category	Organic waste (ton per year)			
	Cowdung	Homestead	Kitchen	Ash
Landless	1.29	0.55	0.51	0.41
Marginal	1.50	0.87	0.54	0.45
Small	1.87	0.75	0.60	0.44
Medium	2.57	0.95	0.44	0.46
Mean	1.81	0.78	0.52	0.44
SD	0.562	0.174	0.067	0.023

**Utilization of organic waste:** Organic wastes produced by the households used for producing different kinds of crops. Farmers used maximum amount of wastes for producing boro rice (Table 4).

**Table 4. Application of organic waste as fertilizer of Char Gubudia village in relation to farming category**

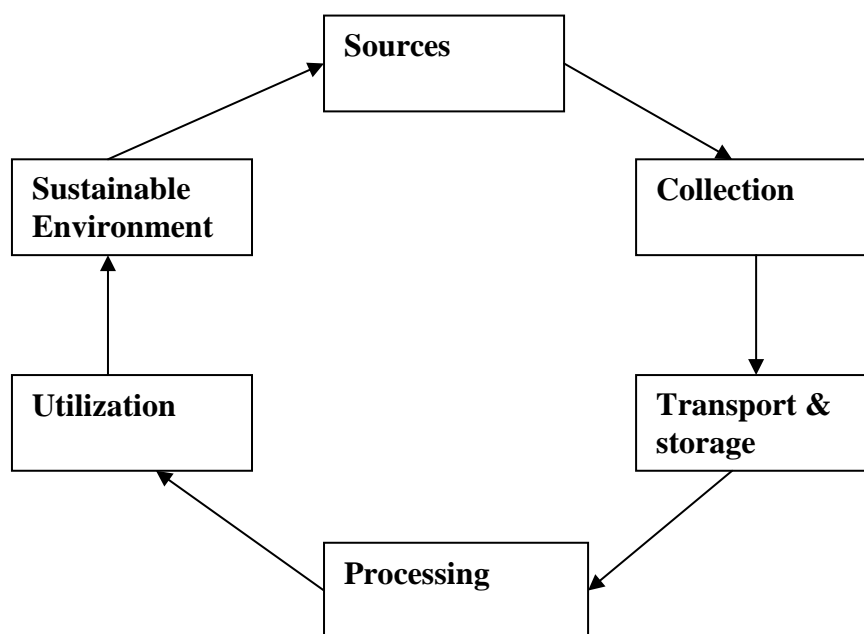
Category	Organic fertilizer in crop and vegetables (ton per acre)				
	Boro rice	Cucumber	Chilli	Okra	Brinjal
Landless	1.47	0	0	0	0
Marginal	1.92	0.37	0	0.28	0.55
Small	1.64	0	1.52	0.47	0
Medium	1.68	0.75	1.12	0.39	0.42
Mean	1.678	0.560	1.320	0.380	0.485
SD	0.186	0.269	0.283	0.095	0.092

**Numerous uses of organic waste:** Different kinds of households used organic wastes in different ways such as fuel, fertilizer, landfill, sale etc. Maximum amount of organic wastes used as fuel by the marginal farmers while small farmers used organic wastes as fertilizer (Table 5).

**Table 5. Numerous uses of organic waste in Char Gubudia village in relation to farming category**

Category	Uses of organic waste (ton per year)			
	Fuel	Fertilizer	Landfill	Sale
Landless	0.40	0.90	0.32	0.21
Marginal	0.70	1.25	0.27	0.18
Small	0.60	1.42	0.45	0.38
Medium	0.12	0.25	0.10	0.12
Mean	0.455	0.955	0.285	0.223
SD	0.256	0.517	0.148	0.112

**Conceptual Model of Waste Management in rural areas**



**Fig 1. Conceptual Model of organic waste management and utilization in a village of Mymensingh district of Bangladesh**

The hierarchy for solid waste management in rural areas is little bit different from municipal solid waste (Fig. 1). The existing pattern of municipal solid waste followed the process which consists of waste generation, storage, collection, transportation and waste disposal (DOE, 2004). Different kinds of wastes are generated in rural areas such as homestead wastes, kitchen wastes, domestic wastes, crop residues and burning refuses. At first, these wastes should be collected and transported for storing in a separate place. After that, these wastes can be processed in different ways. For instance, composting, land filling, throwing on fallow area and fuel processing. This processed waste can be used as fuel, organic fertilizer or compost, animal feed, poultry litter, mulching, household material. Proper utilization of this waste reduces environmental pollution, improve health condition and ultimately bring sustainable environment.

From this experiment, it was widely recognized that production, management and utilization of organic waste in Char Gubudia has no organized facilities but followed an indigenous dealing pattern of organic waste. There is a vast opportunity for the farmers of Char Gubudia village to utilize and manage present organic waste from various sources for better economic return and environmentally sound sustainable agriculture.

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