
COMPOSTING AS AN ACCEPTED HOUSEHOLD WASTE MANAGEMENT TECHNIQUE IN
SELECT AREAS OF SOUTH GOA

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ABSTRACT

Composting aims to stabilization of waste for land filling , volume and mass reduction of solid waste and return of organic substances to the natural cycle .This paper reviews composting for treating waste as a means of addressing environmental pollution concerns. In selected areas of South Goa the characteristics of domestic waste the awareness of waste management provided by the government, how the awareness was created, waste segregation, rating of service management and how they came to know about this schemes, whether they compost, what are the reasons for not composting, to study the willingness to compost and find out food waste disposal at the household level were firstly studied by questionnaires. A survey was conducted covering 200 respondents in Salcete taluka, the places selected were Fatorda, Colva, Navelim, Cuncolim and Chinchinim, to analysis whether the respondents responsibly take care of waste generated at their homes.

Keywords: waste disposal, Composting, awareness, food waste disposal.

INTRODUCTION

Biodegradable materials like garden waste, kitchen waste and waste paper/card represent 55 % of the total quantity of municipal solid waste (MSW) deposited in England landfill [1]. As one of the six greenhouse gases methane is responsible for global warming which needs to be reduced, in order to tackle climate change under Kyoto Protocol (UN, 1998). The methane emissions from landfills constitute about 30% of the global anthropogenic emissions of methane to the atmosphere [9]. In Sri Lanka, organic fraction of Municipal Solid Waste (MSW) contributes 70 - 90% of total waste stream in many municipalities [2]. Household composting has been identified as an option to enhance the economic conditions of urban poor people through home gardening and selling of compost and/or recyclables [3]. An aerobic, biological process in which organic wastes, such as garden and kitchen waste are converted into a stable granular material which can be applied to land to improve soil structure and enrich the nutrient content of the soil [4]. Simple quantity measurements of waste categories with life cycle assessments (LCAs) were compared for a number of disposed products [5]. Even as early as 1997, landfill gases were the third largest contributors to greenhouse gases in India [6]. Compost is beneficial for the environment as unnecessary refuse is not dumped into a landfill which helps in replenishment of soil, thereby reducing cost of land reclamation [7]. Swachh Bharat Abhiyan has contributed in waste generation reduction through composting and waste to compost conversion has been increased to 13.13 lakh tonnes per year. Composting can reduce household waste generation by 30 per cent. Composting is also good for plant growth since it provides many essential nutrients for them and it can also be used as fertilizer. It is believed that a family of 4 can easily reduce their waste from 1000 Kg to less than 100 kg every year if they adopt segregation and composting [8]. Eight major waste management group methods divided into categories include animal feeding, source reduction and reuse, recycling, composting, fermentation, landfills, incineration and land application [10]. Composting is like natural process where the organic wastes break down into nutrient-rich compost for garden plants and is the preferred method for organic waste disposal [11]. Landfill method involves burying off waste and is the most common practice for the disposal of waste around the globe [12]. Composting enriches the soil and water retention capacity increases which is best alternative to chemical fertilizers [13]. Compost mixtures allow meat and dairy items to be included but others have only fruit and vegetable scraps [14]. Compared to the small scale waste composting industry practised in the UK other countries like France, the USA, Portugal and Spain, have relatively high rates of waste composting but Japan has a low composting rate [15].

THEORETICAL PERSPECTIVE

Compost land application completes a circle where the nutrients and organic matter which are removed in the harvested produce are replaced (Diener et al, 1993). Recycling of compost to land is a way of maintaining / restoring the soil quality (Smith et al, 2001). It is an aerobic biological process which uses naturally occurring microorganisms to convert biodegradable organic matter into a humus like product. It is easier to handle waste and transport (Fauziah et al, 2009). Compost application to land has to be carried out to ensure sustainable development. (Amlinger et al, 2003). Interest in composting has arisen because of the need for environmentally sound waste treatment technologies. Composting is looked upon as an environmentally acceptable method of waste treatment (Yvette B et al, 2000).

REVIEW OF LITERATURE

Every year in Denmark 1.7 million tonnes of household waste is produced (Miljøstyrelsen, 2008). OHW constitutes around 40% of this waste (Petersen and Domela, 2003), although only around 5% of it is treated biologically (ECN, 2010); According to Petersen and Kielland (2003), the total amount of households that undertake home composting (or backyard composting as it is sometimes called) in Denmark totals 404,000 households. Composting has advantages over incineration and disposal in landfills due to lower operating costs, reduced environmental pollution and, more importantly, many investigations on home composting have been conducted (Faverial and Sierra, 2014; Lleó et al., 2013; Colón et al., 2010; Chang et al., 2006); the effects of aeration (Karnchanawong and Suriyanon, 2011) the quality and stability of the compound (Barrena et al., 2014) and emissions from gas (Ermolaev et al., 2014; Quirós et al., 2014). Beneficial use of the final product is used as a soil conditioner or fertilizer (Li et al., 2013). Brazilian households, small commercial enterprises and cleaning services have nearly 94,335 ton day⁻¹ of organic waste which is 51% of the municipal solid waste (Brasil, 2012). Only 1% of this goes for composting systems and 59% goes to landfills and 39% is dumped. The National Solid Waste Policy has zero-waste guidelines for waste, recycling, composting, incineration and end-of-life disposal in landfills (Brasil, 2010).

OBJECTIVE OF THE STUDY

To analyse the awareness of waste management provided by the government, how the awareness was created, waste segregation, rating of service management and how they came to know about this schemes, whether they compost, what are the reasons for not composting, to study the willingness to compost and find out food waste disposal at the household level.

STATEMENT OF THE PROBLEM

Waste is increasing as a result of growing human populations and can have significant influence on sustainability are campaigns like 'Swachh Bharath' that intend to clean up the country from this stench. Solid waste management is a major problem resident of almost every city in India, existing landfills are now filled to the brim with garbage, and cities struggle to find more land. The Municipal Solid Waste Management (MSWM) Rules, 2016, provide clear guidance for treatment of waste using technologies based on biological treatment of waste for e.g. composting but they do not provide clear course of action on some of the latest technologies such as pyrolysis, gasification, and waste to fuel oil. They also have limited directives towards the implementation of mass burning or incineration. So composting waste is our responsibility and sustainability is only dependent on our responsible attitude and behaviour towards managing our waste avoiding littering, but segregating and submitting waste to the vendors in the correct way.

LIMITATIONS OF THE STUDY

There was difficulty of accessibility of the household members. Some urban people refused to participate in the survey. The area is confined only to Salcete taluka so results cannot be universally accepted. The study is limited to the sample size of 200 respondents only. Due to time constraints study is restricted to limited places/cities only. The research was based on a survey conducted through questionnaire where people were not ready to fill up the responses and they had to be convinced for the same. The topic had to be explained first to the majority of respondents.

RESEARCH METHOD

Data analysis unlike qualitative research, quantitative research involves the collection, analysis and interpretation of numeric data, collected through experiments or surveys, or through interviews using structured or unstructured questionnaires. For the purpose of this study, this definition is adopted as a working definition; that is, the collection, analysis and interpretation of quantitative data using structured household questionnaires.

SURVEY DESIGN

A survey was conducted covering 200 respondents in Salcete taluka, the places selected were Fatorda, Colva, Navelim, Cuncolim and Chinchinim, to analysis whether the respondents responsibly compost waste generated at their homes.

RESEARCH METHODOLOGY

Primary data, generated for the specific purposes of a re-search project, such as transcripts from interviews, questionnaires from a survey, etc. is original data. Data that is available in public for a researcher to collect and analyse is secondary data which takes the form of public reports, newspapers, magazines, websites, books or articles. In this paper quantitative research will be considered as the primary data source, and books, journal articles and official websites as the secondary data source.

Survey instrument -A total of 200 respondents were interviewed using the questionnaire to understand the household composting of waste in Salcete taluka.

TABULAR PRESENTATION

Table-1: Waste management scheme provided by the government

Waste management provided by the government	Yes	No	total			
	106	94	200			
How the awareness created	N.A	Religious place	Panchayat bulletin	Word of mouth	Use of technology	Total
	94	10	60	24	12	200
segregation of waste	NA	Yes	No	Total		
	94	84	22	200		
Rating of service	NA	Very good	Good	No opinion	Bad	Total
	94	8	88	6	4	200

Those respondents who said yes that the government provides scheme and make awareness about waste management were asked how they came to know about this schemes and awareness.

In Fatorda 38% respondents got to know this scheme through word of mouth, 31% respondents said they got the news from panchayat bulletins, 25% got the news through use of technology and 6% got the news from religious places. In Colva 67% of respondents got the news from panchayat bulletin and 33% got the news in religious places, in Navelim, 77% got the news from panchayat bulletins, 18% got the news through word of mouth, and 5% got the news through use of technology, in Cuncolim 67% got the news from panchayat bulletin, 17% heard the news in religious places, and 8% heard the through word of mouth and 8% got the news through use of technology and in Chinchinim 50% said that they got the news from religious places and the other 50% said that they heard the news through panchayat bulletins. Overall 58% got the news through panchayat bulletins, 19% heard the news through word of mouth, 11% got the news through use of technology and 9% got the news from religious places.

Compost	yes	52
	no	148

Reason for not composting	
NA	52
Do not have organic waste	26
Do not what composting is all about	42
Do not have a garden	66
I tried composting but did not work for me	14

Those who said no , their reason were, 32% said that they do not have a garden, 21% said do not know how to compost, 13% do not have much organic waste and 7% said that they tried it but didn't work for me.

Willingness to compost				
greatly interested	yes	no opinion	no	not interested
54	84	20	28	14

The respondents were asked what is the willingness of compost and their response were, 40% said yes, 27% said greatly interested, 19% said no , 7% said no opinion, and 7% said not interested.

Food waste disposal	
Do not have organic waste	88
Do not what composting is all about	06
Do not have a garden	106

55% of respondents lend to livestock feedings, 42% dispose in trash and 3% compost

CHADWATNIE

CONCLUSION

As permanent communities developed people began to dispose of waste in designated dumping areas and biodegradation started developing rapidly but because much of the wastes became non bio-degradable alternative methods needed to be adopted. Composting is not something new but has been practiced many years in the world as a simple and low cost method to manage household organic waste. Food scraps, yard waste, etc. make up major wastes thrown every day. By composting nutrients are replenished back to the soil. Green items, like vegetable peelings, coffee grounds, tea bags, grass cuttings, leaves break down quickly. Brown items, like sticks and branches, paper, cardboard, eggshells, sawdust, break down slowly. The greatest advantage of waste management is to keep the environment fresh and neat. Waste disposal units also make people go disease free since the resultant wastes are properly disposed and taken care of. Implementing a half-baked technique is of no use to both people and environment. Composting is used to reduce household waste disposal in landfill. Composting as a natural process breaks down into nutrient-rich compost. Preferred method for organic waste disposal is composting since it preserves more nutrients than incineration. To improve soil structure and fertility composting has been used as a means of recycling organic matter back into the soil. It has received much attention in recently because of pollution concerns and search for environmentally sound methods for treating waste.

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