Impact of community based waste management effort in the socio-economic upliftment of a rural tourism village in Kerala

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ABSTRACT : This paper outlines the importance of community based initiatives in managing the waste generated in the rural as well as urban areas of India. The study was carried out in Thiruvananthapuram district of Kerala to analyze how the lifestyle of people residing in a small village changed because of farming using the compost prepared from biodegradable waste generated in *Kovalam* rural tourism area. Fifty beneficiary farmers of the initiative were selected as respondents of the study. Results showed motivation and support of a non-government organization working in the locality as the major factor behind the waste management move. They created awareness about the need of composting to keep their surroundings clean and localization of chemical free food to stay healthy. It was observed that farmers adopted bio-pesticides and biodynamic preparations along with compost in their small home garden. The low cost farming not only provided chemical free food for the family and society but also improved the net income of the farmers' families. The effort taken by the promoting agency to popularize composting along with farming among the members of the society in the right time to a group of appropriate beneficiaries made the difference here.

Key words: Chemical free farming, compost, community efforts, waste management

Increasing population and migration of rural youth to cities accelerated the urbanization of India in the recent past. The 2001 and 2011 Indian census data convey that level of urbanization increased from 27.8 per cent to 31.2 per cent during that period. Fast economic developments and rise in disposable income has changed the life style and food habits of the urban population and that in turn increased the waste generation in the country. According to the World Bank lower middle income countries like India and China have a disproportionate high urban waste generation rates per capita relative to overall economic status. However, the large number of relatively poor rural populations of these two countries dilutes national figures on waste generation (Hoornweg and Bhada-Tata, 2012). Some reports confirm that growth of tourism sector in India also plays a major role in waste generation especially in the rural tourism locales of the country. For example, total solid waste generation of Dharamsala town of Himachal Pradesh is 14,000 kg/day (Anand and Singh, 2014), and that of Pahalgam town of Jammu & Kashmir is 18,720 kg/day (Bashir and Goswami, 2016). Though tourism industry is one of major contributors of India's GDP the capital of this industry is the environment and culture of a region, and waste generation is one of the important issue that affect environment negatively (Nair and Jayakumar, 2008).

Waste management has become a priority issue in the rural as well as urban areas of India in the last few years. The country witnessed a number of efforts to promote the safe disposal of hazardous waste, recycling of biodegradable waste and reuse of the waste material in another form. Composting is being promoted as an eco-friendly and sustainable solution to waste management. However, dealing the challenge of managing huge amount of waste generating per day may not be easy as long as people believe that management of waste in any locality is the responsibility of the local government authority. *Clean Kerala Mission* launched by Kerala government in the year 2002 is an example for this. Though different NGOs and community organization like Kudumbasree were involved in the mission the impact was little and no headway could be achieved in MSW management (Koshy, 2010). Still, some community based decentralized initiatives like that of Palani and Dindigul towns of Tamil Nadu (Ghosh *et al*., 2007) where waste materials were converted into compost and sold to farmers and residents conveys the need for motivating

groups of people to manage waste locally. In this regard, the study was planned to assess the impact of community level waste management initiative by *Thanal*, a Non Government Organization (NGO) of Thiruvananthapuram district of Kerala, in improving the living standards of people of a rural tourist village in the district through promotion of chemical free farming using compost prepared out of the waste generated in the locality.

MATERIALS AND METHODS

Thiruvananthapuram district of Kerala state was selected as the locale of study based on the reports about the waste management efforts of a Thiruvanathapuram based Non Government Organization (NGO), *Thanal* in the Kovalam beach area as well as promotion of poison free farming in the district. The study was carried out during 2010-11 to analyze the socio-economic upliftment of the rural villagers due to the waste management and poison free farming efforts of *Thanal*. Data collection was carried out through interviews with the officials of *Thanal* and staff of 'Zero Waste Centre' working under the NGO. Fifty beneficiary farmers of *Thanal's* poison free farming initiative were selected randomly from *Azhakulam* village near to Kovalam to study the socio-economic benefits of the local community due to the adoption of farming using compost, and to identify factors which motivated them to adopt poison free farming in their homestead. Open ended questions were prepared to interview the officials and staff of the NGO whereas a semi structured interview schedule was prepared to collect data from the farmers. The statistical tools used to analyze the data were percentage analysis, Friedman's test, and Garrett's ranking.

RESULTS AND DISCUSSION

Interventions by Thanal in the Rural Tourism Village 'Kovalam'

Kovalam is a small tourist village located in Thiruvananthapuram district of Kerala famous for its beautiful beach in the world tourist map. A study carried out by *Thanal* in the year 2001 revealed that average per day production of biodegradable waste from the hotels and restaurants of Kovalam was about 6.7 tonnes along with an equal amount of non-degradable waste like pet bottles, plastic carry bags, milk covers, cloth etc. Those waste materials were being managed either by dumping in the nearby areas or by burning. Realizing the need for a management strategy to eradicate the waste related problems of the area the NGO started its attempt to make Kovalam free of waste with the support of the Kerala Hotel and Restaurant Association. When the biodegradable waste of the locality converted into compost *Thanal* linked the concept of 'localization of chemical free food through farming' with waste management as a small initiative to ameliorate the pesticide related issues of Kerala. For this, they targeted a few interested housewives and retired people of the nearby place *Azhakulam*. They were promoted to grow chemical free vegetables in their homesteads for their family using the compost produced in the Zero Waste Centre of the NGO. The farmers were also trained to prepare different organic inputs like compost, *panchagavya*, *jeevamrita*, five-leaf extract etc. and to manage different pests and diseases. People who did not have enough area for farming were trained to raise vegetables on terraces in pots and sacks. Other than compost *Thanal* provided different organic inputs on subsidized prices to these landless farmers. When the production of vegetables increased and resulted a surplus in each home the NGO ended up with a new project idea of *Organic Bazaar* in 2003 so that they could sell these organic vegetables to the urban citizens of the district who did not have time for farming but wanted to enjoy a good healthy and safe diet. There was no third party certification for the produce as all farmers were producing primarily for their own requirements. However, there was an internal control system through which field officers of NGO were inspecting the farmers' fields twice a week to monitor the activities and to provide guidelines. Initially *Organic Bazaar* opened during weekends in the evening and later they started functioning twice a week (Wednesday and Friday). Since the consumers were the demanders of quality farmers were getting more prices to the produce without any bargaining. Organic bazaar started with a small group of 20 farmers and that much of consumers in 2003 reached to a group of 300 farmers and nearly 500 consumers in a span of 7 years.

Socio-economic characteristics of the respondent farmers

Socio-economic profile of the farmers (Table 1) shows that most of the farmers belonged to the young and middle age category and educated enough to perceive the relevance of various social issues. All the families surveyed belonged to the nuclear type and mostly farmers were new to farming with less than 10 year experience in farming. They owned only small land area and in most of

Table 1: Socio-economic characteristics of the respondent farmers (n=50)

Sl.No.	Variables	Frequency	Percentage
1.	*Age*		
	Young (≤ 35 years)	27	54
	Middle aged (36-60 years)	20	40
	Old (> 60 years)	3	6
2.	*Education*		
	1- 7 years of formal education (Primary/upper primary)	16	32
	8-10 years of formal education (High school)	25	50
	≥ 10+2 years of formal education (Higher Secondary)	9	18
3.	*Occupation*		
	Full time farming	0	0
	Farming in leisure time	50	100
4.	*Family Type*		
	Joint family	0	0
	Nuclear family	50	100
5.	*Type of House*		
	Tiled	5	10
	Concrete	45	90
6.	*Land Ownership*		
	> 1-acre	45	90
	1-2 acre	5	10
7.	*Experience in farming*		
	≤ 10 years	34	68
	> 10 years	16	32
8.	*Number of Crops Grown*		
	≤ 3 crops	5	10
	4-6 crops	38	76
	> 6 crops	7	14

the cases a lion share of the owned land occupied by the house itself leaving a small backyard. However, nearly two third of the farmers were growing 4 to 6 types of vegetable crops in the available space especially on terrace and fence of their home in poly bags/pots.

Adoption Pattern of Various Agricultural Technologies

The results (Table 2) revealed varying degrees of adoption of different agricultural technologies related to chemical free farming by the respondent farmers. All the farmers found to be in the 'full adopter' category of organic manure and compost. Though there were no facilities for composting in most of the beneficiary farmers' homes they were getting sufficient compost from the 'zero waste centre' of the promoting agency on subsidized price. Though all the respondent farmers belonged to the adopter category of bio-pesticides and biodynamic preparations a few of them found to be 'partial adopters' that means these farmers used the two technologies whenever it was available close to them.

The incomplete awareness or limited diffusion of the technology might be another reason for restricted adoption rates of those technologies by the farmers (Diagne, 2006; Simtowe *et al.,* 2011). Further, most of the farmers used locally available seeds in their vegetable garden but, they were not sure about whether the seeds were of local breed or hybrid. They used traditional seeds for farming whenever available through their family, friends and neighbours. Hence, use of traditional seeds found to be confined to 64 per cent of the farmers and that

Table 2: Distribution of respondents on different levels of adoption of agricultural technologies

Sl. No.	Agricultural Technologies	Full Adoption		Partial Adoption		No Adoption	
		f	*%*	*f*	*%*	*f*	*%*
1.	Bio-pesticides	38	76	12	24	0	0
2.	Bio-Fertilizers	0	0	0	0	50	100
3.	Organic manures and compost	50	100	0	0	0	0
4	Traditional seeds	0	0	32	64	18	36
5.	Biodynamic preparations	42	84	8	16	0	0

Table 3: Major factors motivated the respondents to adopt chemical free farming in their homesteads

Sl. No.	Parameters	Total Score	Average Score	Rank
1	Technological support and motivation of promoting agency	3872	77.44	I
2	Chemical free food for the family throughout the year	3239	64.78	II
3	High demand of organic vegetables in the local market	2681	53.62	III
4	Chemical free farming reduces pollution of environment and its resources	2616	52.32	IV
5	The promise of low input farming	2549	50.98	V
6	To make the free/leisure time more productive	2205	44.1	VI
7	To support the organic farming movement of Kerala state government	1592	31.84	VII
8	Increasing demand and premium price of organic produce in export market	1332	26.64	VIII

Table 4: Farmers' perception about the major changes in their family and society due to the adoption of chemical free farming

Sl. No.	Parameters	Mean Rank
1	Improved net income of the family	7.49
2	Chemical free food made available to the family at low cost	7.10
3	Recycling of kitchen waste keep the home and surroundings clean	6.20
4	High quality foodstuffs made available to other members of the society	5.71
5	Poison free farming protect water resources from chemicals	5.54
6	Improved interaction with members of the society	5.40
7	Employment to the rural poor in the compost making process	5.36
8	Recognition of Indigenous knowledge involved with the poison free farming	5.26
9	Enabled to accumulate working capital for another small enterprise	4.93
10	Equitable access to social assets	2.01
	Chi-Square : 133.458 df : 9 p value : < 0.001	

too partial adoption. Biofertilizers were less familiar to the respondent farmers. Though biofertilizers are environment friendly nutrient management option for crop plants the technology its use reported to be low among the farmers of India. Ghosh (2004) and Mazid & Khan (2014) reported about the low demand for biofertilizers in India but, reason for low adoption in the study area might not be farmers' illiteracy (Majumdar, 2015) as majority of the farmers had good level of education to understand facts.

Major factors motivated the respondents to adopt chemical free farming in their homesteads

The Garrett's ranking procedure to identify the major factors behind the adoption of chemical free farming using compost (Table 3) conveyed that motivation and support of the promoting agency played the key role to lead the residents of a society to start farming in their limited surroundings.

The promise of availability of chemical free vegetables for the family found to be the second important factor behind the move. Some researches revealed that small farmers' participation in organic farming related to extension activities/trainings received from promoting agencies (Kafle 2011; Rezvanfar *et al.,* 2011) as well as to meet the emerging demand for chemical free environment and chemical free food (Bhattacharyaa and Chakraborthy (2005). Though farming was mainly to feed the family with safe food, demand for organic vegetables in the local market also attracted most of the farmers towards chemical free farming.

Farmers' perception about the major changes in their family and society due to the adoption of chemical free farming

Results of the Freidman's conveyed that major changes happened in the family with the adoption of chemical free farming were the improvement in the family net income along with availability of chemical free food by spending a small amount as input cost. Also, families started to recycle their kitchen waste through composting that helped them to keep their surroundings clean. That shows that the promoting agency succeeded in spreading the concept of waste management in the right way. The potential of waste to generate livelihood for the urban poor through composting was highlighted by some earlier workers (Ghosh *et al.*, 2007; Agarwal *et al.*, 2015).

CONCLUSION

The chemical agriculture and the food distribution systems that has developed and sustained through years in India have been affecting each of us in many ways. Efforts to get out of this situation are mainly confined to few localities of the country. The result of the study conveyed that the approach of *Thanal* to localise chemical free food through effective human and material resource utilization and converting the discards into useful compost not only developed a new farming culture in the society but also improved the economy of a small village. Promotion of these kinds of successful community waste management models throughout the country may help to manage the waste at source itself and thus to wipe out the growing waste menace in the rural and urban India.

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