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AGRO WASTES AND EFFECTIVE AGRO WASTE MANAGEMENT PRACTICES FOLLOWED IN INDIA

Dr. T. Balamurugan

Mr. S. Annamalai

ABSTRACT

About 72 percent of the fruit and vegetable production in India goes waste because of lack of proper retailing and adequate storage capacity, an agriculture ministry official said here on Monday. The production of vegetables in India is next only to China. The vegetable and fruit production contributes more than 30 percent of the agriculture GDP. The crop diversification has led to rise in horticulture production, which has reached 185.2 billion tonnes last year.

But the real challenge starts after the production. More than 72 percent of the vegetable and fruits are wasted in the absence of proper retailing. The sector is constrained by widespread fragmentation in the supply chain, low productivity levels, and huge post harvest losses arising out of inadequate storage, cold chain and transport infrastructure, logistics and supply chain management. Only organised and traditional retailing will ultimately drive the growth of the fruits and vegetable sector in the country. Despite different types of fruits and vegetables grown, India's export of agricultural and food products was only 1.4 percent of the total global trade. Hence a study is made to find out the effective waste management practices followed in India

KEYWORDS : WASTE, AGRO WASTE, AGRICULTURAL WASTE AND WASTE MANAGEMENT

INTRODUCTION

Agro-waste refers to those parts of the plant which is not the fruit, vegetable, grain or fibre being grown like stalks, leaves, etc. Part of it is used as fodder for farm animals but a majority is burnt by most farmers. These waste are use to make pellets and briquettes to be used as alternative to coal, firewood, cooking gas, Generating power through biomass, Turning into ethanol as alternative to fossil fuels. The main advantages are checking pollution caused by burning, boost to rural economy through providing entrepreneurial opportunities and job creation and enhancement to the income of farmers

AGRICULTURAL WASTE CREATES FIELDS OF GOLD IN RURAL INDIA

Indian farmers are turning garbage into gold. The husks, weeds and other agricultural waste they thought were useless are being converted into sustainable, non-polluting and cheap energy that is lighting up villages and irrevocably changing lives.

The government claims an estimated 310,000 of India's half-a-million villages have electricity. In reality, this is usually unreliable, irregular and of poor quality. About 80,000 villages have no power, because it is neither feasible nor economical to connect them to conventional electricity. For the millions who have never experienced the magic of power, it also means there are no small industries in these areas, given the prohibitive costs of diesel generators.

The federal Ministry of Non-Conventional Energy Sources announced a new project that would use biomass or organic waste to meet all the energy needs of about 25,000 remote villages unreachable by the national power grid.

Appropriate Rural Technology Institute (ARTI), a group of scientists and social workers committed to rural development, says India generates about 500 million tons of agrowaste annually.

Today, a cooperative oversees the growth of micro-scale industries which is alive with noisy electric pumps, battery charging stations, rice and flour mills and a briquetting press.

In the last three months, NSAI bought 7,000 tons of agrowaste worth five million rupees (109,111 U.S. dollars), in the process augmenting the incomes of nearly 2,000 farmers. It has also created much-needed jobs for unemployed youth who transport the waste from field to factory and operate crushers to powder it. As news of these success stories spreads, villagers are beginning to realize that agrowaste can be a permanent fuel source. Slowly, rural India is literally beginning to see the light - this time with bulbs, not kerosene lamps.

TABLE NO 1

MEASURES TAKEN BY SOME OF THE APMCS TO UTILIZE THE AGRICULTURAL WASTES

Name of the APMC	Measures taken
APMC Mumbai	Making efforts to utilize the agricultural waste generated within the market yard (specifically fruit, vegetable, onion, potato and other agri commodity) for power generation and biogas production. Proposal prepared with assistance of B.A.R.C Mumbai and submitted to Director (Marketing), Govt. of Maharashtra
APMC Chennai	Agriculture Marketing Board Koyambedu Chennai is producing 250KW electricity in collaboration with RAMkY Group, however, it requires 150metric Ton agriculture waste daily. It is a model project and they are planning to extend capacity of the plant. A MOU is signed between marketing board and RAMKY group, whereas RAMKY is using electricity and board is counting Carbon Credit.
APMC Kolkata	Kolkata Agriculture Trader Association is planning to produce electricity by paddy husk, however they are producing oil with paddy husk, moreover, and it is also used as a catalyst in factories for ignition. Kolkata is using Bananas straws for making Tobacco and medicine.
APMC Pune	Utilizing this waste for land filling
APMC Delhi	Utilizing Agriculture waste to produce compost and they are trying to venture with some private companies for Power generation.
APMC Jalandhar	APMC Jalandhar is using sunflower waste for ignition purpose

TABLE NO 2 WASTE COLLECTION AND DISPOSAL MECHANISM

Name of the APMC	Existing Waste Collection and Disposal Mechanism
Azadpur APMC, New Delhi	• The garbage generated in the market yard is collected from lanes, by-lanes, roads through manual labour with the help of mini-dumpers/hand carts. • The jetting machine is also use for removing the sewer blockage and sewer line cleaning etc. • The market committee has purchased three skid loaders which are use for scrapping, brooming and loading of garbage from inner side of the market yard and these are very effective and successful to maintain & improve the sanitation condition at the market yard.
Najafgarh APMC (New grain market) **New Delhi**	• Product received in dry form (food grains) and no significant waste generated. Routine cleaning and maintenance of hygiene is done by sweepers engaged by the APMC
Narela APMC (New grain Market) , **New Delhi**	• Product received in dry form (food grains) and no significant waste generated. Routine cleaning and maintenance of hygiene is done by sanitation agency engaged by the APMC
Mumbai APMC	• The waste generated is collected in the form of garbage (including agricultural waste) from the market yard to a dumping spot within the market complex The collected garbage in then disposed off by the use of compactors to the nearest dumping ground of the municipal corporation. • Mumbai APMC maintains hygiene in the market yard by disposing off the garbage.
Pune APMC	• Carried in two steps 1) The agricultural wastes (vegetables, fruits and other commodities) collected as garbage by in house staff in containers at particular location designated for waste disposal 2) Eth garbage collected in Containers is collected by the Contractor's workers in tractor trolley and disposed off the Market
Jalandhar	Nothing specific
Kanpur APMC	Waste generated in the Market yard is disposed by Tractor, trolley by Contractor in earth filling

TABLE NO 4.10 NEW INNOVATION/MACHINERY INTRODUCED FOR WASTE DISPOSAL

Name of the APMC	New innovation/Machinary/Technology
Mumbai APMC	Introduced compactors for waste disposal from September 2011 replacing the previous mode of disposal of garbage by open trucks/Dumpers
Pune APMC	Nil
Azadpur APMC, New Delhi	Use of jetting machine for removing the sewer blockage and sewer line cleaning etc.The market committee has purchased three skid loaders for scrapping, brooming and loading of garbage from inner side of the market yard
Jalandhar APMC	Nil
	Use of Tractor/Trolley
Najafgarh APMC (New grain market) New Delhi	Nil
Narela APMC (New grain Market) , New Delhi	Nil

FINDINGS OF THE STUDY

1. In developing countries like India, 40% of losses occur at post-harvest and processing levels while in industrialized countries more than 40% of losses happen at retail and consumer levels.
2. Lack of storage facilities, high demand and supply fluctuations, lack of back end infrastructure, post harvest management facilities and infrastructure and lack of state of the art retailing practice in fresh produce lead to a high wastage of 30-40% in high value perishables commodities like fruits and vegetables in India.
3. Food losses represent a waste of resources used in production such as land, water, energy and inputs. Producing food that will not be consumed leads to loss of economic value of the food produced.
4. Economically avoidable food losses have a direct and negative impact on the income of both farmers and consumers. Irrespective of the development status of the Country, every possible measure should be taken to keep food losses to minimum.
5. It was found that a huge quantum of fresh fruits and vegetables arrive and transacted daily in these Markets. As per traders survey, waste generated in fruits range from 2.6% to as high as 11.4 %. Wastage in Vegetables ranged from 3.15% to 12.6%. Markets like Azadpur generate approximately 4% wastages of both fruits and Vegetables.
6. Percent wastage reported by the Market Committee is comparatively quite low as against traders. This clearly indicates that a huge amount of food commodity wasted goes unreported.
7. Majority of the wastes generated in the APMCs are disposed off as garbage. Hence the entire volume of food waste is unutilized and results in food loss and hence economic loss.
8. Some of the APMCs have taken new initiatives to utilize the waste generated as below:

APMC	Initiative
Chennai	Electricity Generation
Kolkata	Oil from Paddy husk Banana straw for making tobacco and medicines
Pune and Kanpur	Land/Earth filling
Delhi	Compost production
Jalandhar	Using sunflower waste for ignition purpose

9. These efforts are the stepping stone and we need to build up a strong foundation with a holistic effort and concerted measures for waste management.
10. One of the major constraints in waste management is that we have no regulation for waste management or any State level intervention for handling the agricultural wastes.
11. The expenditure incurred on waste disposal ranges from a significant 5.97% in APMCs like Mumbai who use scientific and mechanized waste disposal mechanism to as low as 0.06% in APMC Kanpur where waste disposal mechanism is involves maintaining basic sanitation and cleanliness. Even in APMC Mumbai, the expenditure incurred is only for disposal of the Waste.
12. No significant expenditure is reported in terms of utilization of these agricultural wastes for any significant use.
13. Efforts are underway by Mumbai APMC and in near future power generation can be a significant output of these agricultural wastes generated.

CONCLUSION

It is believed that the agricultural sector is all set for a revolution of sorts. Farmers need to shift attention from primary agriculture to

secondary, wherein they enhance the value of the produce and utilize all possible by products. Biomass generated from plants that is usually burnt can be a big money-spinner, they believe.

Major APMCs generating huge quantity of agro wastes which are mostly disposed in open dumps, creating environmental pollution. Waste generation in these markets cannot be avoided as a whole. However, it can be reduced or checked to some extent by using various waste management practices such as control measures, pollution reductions measures, reuse and recycle, waste utilization and waste treatment. Waste disposal should be the last option for the effective and efficient management of waste. It is further seen from the study that all the markets which are using waste management practices have got a number of benefits such as reduction in pollution, waste and cost of production and above all good environment.

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