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Class:	II Ph. D (Agril. Extn)	Date:	09/04/2022

Doctoral Seminar-I
Management of Agriculture Waste in Protecting Environment

SYNOPSIS

Introduction:

The world's population has risen from 3.7 billion in 1970 to 7.9 billion in 2021 and predicted to reach 9 billion by 2050 (Koops and van Leeuwen, 2017). In order to fulfil the intense demands of millions there has been a significant rise in the crop production as well as livestock, which has further contributed towards generation of agriculture wastes (AWs). It is estimated that India generates around 500 million tons (Mt) of crop residue annually (NPMCR 2019**).** Highest in the state of Uttar Pradesh (60Mt) followed by Punjab (51 Mt) and Maharashtra (46 Mt) with a grand total of 500 Mt per year out of which 92 Mt is burnt. Cereals, fibers, oilseeds, pulses and sugarcane contributed the highest crop residue with production estimations of 352 Mt, 66 Mt, 29 Mt, 17 Mt and 361 Mt, respectively. Among cereal crops- rice, wheat, maize and millets together contributed 70% of crop residue followed by fiber crops (13%). The Agriculture Waste and their processing are a global issue since its vast, majority is currently burned or buried in soil, causing pollution of air, water and global warming. Thus, it is need of the hour to manage agriculture waste to make good sense both environmentally and economically. Systematic utilization of agricultural waste also helps to improve environmental conditions by reducing pollution caused by disposal of huge agriculture waste.

Objectives:

1. To assess the quantity of agriculture waste generated and its classification
2. To discuss the impact of unscientific management of AW on human health and environment
3. To understand the agriculture waste management strategies
4. To enlist the AW management initiatives of government and non-government in the country

Wastes: Wastes is any substance which is discarded after primary use

Agricultural Wastes: Agricultural wastes are defined as the residues from the growing and processing of raw agricultural products such as fruits, vegetables, meat, poultry, dairy products, and crops.

Types of wastes: there are two types of classification *i.e.,* According to their effects on human health: Hazardous type and Non-Hazardous type and According to their properties: Biodegradable and non-biodegradable type

Impact on environment: The main adverse effects of crop residue burning include the emission of greenhouse gases (GHGs) that contributes to the global warming, increased levels of particulate matter (PM) and smog that cause health hazards, loss of biodiversity of agricultural lands, and the deterioration of soil fertility

Impact on human health: Accumulation of nitrates in water body may pollute drinking water for humans and livestock. It combines with the haemoglobin to form methaemoglobin, leads to a serious disease known as BLUE BABY SYNDROME

Agricultural Waste Management System (AWMS): Planned system in which all necessary components are installed and managed to control and use by-products of agricultural production in a manner that sustains the quality of air, water, soil, plant, and animal resources.

There are various models for waste management for crops like Paddy, Wheat, Cotton and Sugarcane Ethanol, Molasses

Waste Management Initiations: Government and non-government or private companies taken up various initiatives such as Bio char, Soil less Planting Media, Foliar Spray, PUSA Decomposer capsules, CFTRI: Banana waste management and Bio-Lutions Pvt. Ltd., Fermentech Lab Pvt. Ltd respectively.

Research studies

Sindhu (2015) conducted study on agriculture waste utilization at Haryana. Research result found that the awareness on utilization of biogas plant waste, mushroom waste, wheat waste, mustard and horticultural waste was more than 70 percent. Awareness about utilization of paddy waste, sugarcane waste, cotton waste, floricultural wastes, poultry waste and livestock waste were between 50 to 60 per cent. Thus, overall awareness about utilization of agricultural waste was very high.

Singh *et al.* (2020) conducted case studies in Ludhiana district of Punjab with three dairy farmers, each pursuing vermicomposting, biogas production and traditional composting. It is reported that the net returns from the animal waste obtained from one cattle equivalent were highest from vermicomposting (Rs. 11,012) followed by biogas production (Rs. 2,656) and composting (Rs. 225).

Ravi *et. al* (2021) conducted a study on extent of adoption of agri waste management practices by the farmers of Medak district of Telangana. The study revealed that majority of the farmers (45.80%) fall under the category of medium adoption, followed by low (27.50%) and high (26.70%) adoption categories with regards to the adoption of agri waste management practices.

Conclusion:

Indian population is increasing year by year with increasing food demand. Increasing food production, resulting significantly in generating agriculture waste residue. Several studies reported that Indian farmers are not utilising agriculture wastes properly which is impacting on environment as well as farmer's income and Indian economy. There has been huge difference between the awareness and utilization of agricultural waste. This difference existed due to lack of interest among the farmers. Thus, there is need to motivate farmers which can be made possible by organizing trainings, lectures, educative films to farmers or demonstrating waste management techniques on field.

Reference:

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SINDHU N., 2015, Agricultural Waste Utilization in Diversified Agriculture. *M.Sc. (Agri). Thesis,* Choudhary Charan Singh Haryana Agricultural University, Hisar, Haryana (India).

SINGH A., TIWARI, R. AND DULT. T., 2020, Augmentation of farmers' income in India through sustainable waste management techniques, *Journal for a Sustainable Circular Economy., 35(**2**):1-11.*