Asian Journal of Research in Business Economics and Management
ISSN: 2249-7307 Vol. 11, Issue 11, November 2021 SJIF 2021 = 8.075
A peer reviewed journal

AN ANALYSIS ON THE AGRICULTURAL WASTE MANAGEMENT

Narendra Nath Saxena*; Dr Prafull Kumar**

*SOA,
Sanskriti University, Mathura, Uttar Pradesh, INDIA
Email id: narendra.ag@sanskriti.edu.in,

**SOA,
Sanskriti University, Mathura, Uttar Pradesh, INDIA
Email id: prafull@sanskriti.edu.in

DOI: 10.5958/2249-7307.2021.00055.4

ABSTRACT

Farming is India's and the world's oldest profession. Agriculture is one of the most important professions, since it supports both secondary and territorial sectors. Agribusinesses are farms that support the development of companies by providing raw resources such as textile cotton, cigarette tobacco, and so on. Agricultural waste is a byproduct of agriculture that may yield material that is useful to humans but has a lower economic worth than the cost of collecting, transportation, and processing for that purpose. Estimates of farm waste are limited, although it is generally believed that it accounts for a substantial portion of overall waste in the industrialized world. The inappropriate use of intensive agricultural methods and chemical misuse in agriculture are common in the agricultural sector, which has a detrimental effect on rural populations and the climate system. From a variety of sources, rural trash is generated mostly via agriculture, livestock, and aquaculture. These wastes are presently used in the '3R' Waste Management Strategy for a variety of purposes. This article discusses the Agricultural Waste Management System (AWMS). Agricultural waste has the potential to be harmful to plants, animals, and humans in a variety of ways, both direct and indirect. The environmental effects and management of this hazardous agricultural waste have also been addressed, which will be beneficial to agricultural researchers and students who want to learn more about waste management.

KEYWORDS: *Agricultural, Animal, Cultivation, Environment, Waste.*

1. INTRODUCTION

Agrarian waste refers to the accumulation of crude horticulture goods such as natural products, vegetables, meat, poultry, milk products, and harvested harvests. They are the by-products of rural production and preparation that may include elements that are beneficial to humans but whose financial value does not match the cost of collection, transportation, and processing. It may be in the form of fluids, slurries, or solids, and the organization will be determined by the framework and kind of homesteading activities. Food squander (just 20% of maize is edible, and 80% of it is trash), crop squander (corn stalks, sugar stick bagasse, soil drop products, pruned food), and potentially hazardous and toxic horticulture waste are all recalled as agricultural waste (pesticides, bug sprays and herbicides, and so on). Agricultural waste assessments are rare, although they are generally thought to generate a significant percentage of the total waste material in the created world. Traditionally, increased agricultural production has resulted in an increase in domesticated animal waste, crop deposits, and agro-modern side-effects. If non-industrial countries continue to improve their agricultural systems, horticultural waste is expected to rise dramatically globally. Agricultural waste is estimated to be about 998 million tons each year. Natural trash may handle up to 80% of the general strong waste generated by any household, with compost production

reaching up to 5.27 kg per day/1000 kg living weight on a wet weight basis(1,2).

As previously said, agricultural growth is often accompanied by waste from the careless use of advanced cultivating methods and the mistreatment of synthetic items used in development, both of which have a significant impact on nation circumstances and the global environment. The trash generated is dependent on this kind of rural activity.While warmer weather is beneficial to crops, it also promotes the development and production of insects and weeds. This situation generates a large supply of pesticides in an attempt to damage insects and protect them from the spread of infectious illness; it often leads to pesticide misuse by farm owners. The majority of pesticide bottles and packaging are tossed into fields or ponds after they have been used. The Plant Protection Department (PPD) was responsible for around 1.8 percent of the chemicals used in their packaging. Because of their potentially useful and hazardous chemicals, these side-effects may cause erratic ecological outcomes such as food poisoning, unsafe food cleanliness, and sullied agricultural areas. Furthermore, existing buildup bundles and pesticide bunches of unique substance containing stale or unused pesticides have real ramifications for the climate because they may be mistakenly stored or covered, allowing them to spill in or enter the climate as a natural by-product, thereby influencing the climate. Composts, for example, play an important role in the preservation of plant profitability and quality in horticulture production. Inorganic manure is simple to use and very helpful. Many ranchers, on the other hand, use more manure than plants to boost their yields. The maltreatment of annual agricultural output is a serious consequence of such irrational fertilizer usage. The rate at which those fertilizer components (nitrogen, phosphorus, and potassium) are absorbed varies depending on the kind of land, plant, and fertilizer used(3–5).

2. WATER POLLUTION

One portion of the surplus fertilizer is kept in the soil, while another part is absorbed by surface rushes, lakes, and/or rivers, leading in surface water pollution. Another component of the soil enters the soil water, which is either evaporating or de-nitrating, producing air pollution.

2.1. Livestock Production Wastes:

Waste materials such as butcher shop manure and organic matter, waste water, cage waste, bathing, sanitary waste, poisonous gases such as H2S and CH4, and smells are all examples of cat waste. Because most of it is constructed on residential grounds, the pollution produced by animal husbandry is a major concern. Cages from animal feces digestion, decaying organic manure, animal urine, and/or outdated foods all contribute to air pollution. Animal density, wind, humidity, and temperature all influence the strength of the odor. The amount of NH3, H2S, and CH4 in the food, as well as organic compounds, nutritional components, microbes, and the health of the animals, all influence digestion. This unprocessed and useless waste source has the potential to emit greenhouse gases and pollute soil fertility and water. Biotechnology, inorganic materials, many microorganisms, and parasitic organism species make up the remainder. Waste materials create 75 to 95 percent of the amount of water produced. Microbes and materials like this may cause human illnesses and have a variety of negative impacts on the environment.

2.2. Aquaculture Wastes:

Aquaculture expansion has resulted in increased feed usage for improved production. The amount of feed utilized in a system is the most important element in determining the amount of waste generated. This part of the study offers a summary of information on waste generated by the usage of aquaculture feed. One of the most common squanders in hydroponics is metabolic waste that may be broken down or postponed. In a well-managed ranch, strong waste accounts for around 30% of the feed used. Taking care of rates is influenced by the temperature of the environment. Increased temperature leads to increased feed, which leads to increased waste age. The example of water stream in waste production units is important because an adequate stream will limit the

fracture of fish feces and will enable the solids to be settled and thought quickly. The speed with which a large amount of un-fragmented feces may be collected and decomposed natural waste is reduced can be considerable(6,7).

2.3. Routes for Waste Utilization:

Agricultural waste innovation must either utilize byproducts quickly or keep them in non-perishable circumstances, or render the particles unsuitable for the desired ultimate product. The trash may be used to a variety of uses.

Waste management is becoming both a burning issue and a global issue facing the whole globe. Nuclear waste, e-waste, and the conversion of agricultural waste into resources are all problems we confront. We have a trash disposal issue. If agricultural wastes were correctly handled, they might be a valuable resource in the agricultural industry. Agricultural trash, which includes farm waste, waste seeds and seedlings, and cow dung, which is still considered agricultural waste since it is an important component of our farming systems, has a lot to do with it. Agriculture, on the other hand, will undoubtedly help our economic system if it is managed wisely.

Global warming is a serious issue, and the only way to combat it is to reuse resources. Horticulture, agro-processing, feed, farm trash, and aquaculture all included waste from agricultural goods after 1947. Every year, the globe produces 140 billion tons of agricultural biomass, and India produces 500 tons of farm waste. However, agricultural waste, such as bio composting, mushroom production, power generation, animal feed, and much more, must be minimized and reused in an appropriate and proportional manner. Basic trash disposal methods such as septic garbage drainage, open land, and burning are still utilized in India. After harvesting, agribusiness leaves behind leaves, stalks, and other debris. These wastes are big and contain little protein and fat. Wheat, paddy, sugarcane, mustard, bagasse, vegetable residue, tea, jute fiber, food, wood-burning trash, and so on are examples. Around 20% of agribusinesses are harmed by inadequate post-harvesting facilities, while 10% are destroyed by rats.

The choice of trash procedures must be based on a lower environmental effect as well as better accuracy. Agri-residue reduction and organic matter recycling are other important management goals. Aerobic or anaerobic methods may be used to dispose of manure/compost trash or waste with little environmental effect. Under squander the executives, a variety of cycles are available, including collection, transportation, preparation, reuse or removal, and waste checking. Squander microbial innovation is used for the repurposing and preparation of foods produced in the ground. If there is an incidence of banana, a substantial yield is produced in approximately 46,900 hectares of land in Maharashtra, and the harvest generates a large quantity of trash. Another waste management innovation is the preparedness of natural manures using a soil treatment approach. This invention contributes to increased soil fertility and development. In Rajasthan, Kalpataru Power Transmission Ltd. used agricultural waste to generate electricity. The system generates almost 8 MW of electricity. Maharashtra produces a large output of bananas in approximately 46,900 hectares and generates a lot of trash after harvest. Another waste management innovation is the use of natural manures in conjunction with a soil treatment method. This invention contributes to increased soil diversity and yield generation. In Rajasthan, Kalpataru Power Transmission Ltd. has created energy from agricultural waste from mustard crops. The setup generates almost 8 MW of power(8,9).

3. IMPORTANCE OF THE AGRICULTURAL WASTE

Farm waste differs from nuclear waste in that it affects soil fertility. Agricultural waste may be turned into a useful resource if the proper steps are taken. It converts certain food grains, seeds, and seedlings into organic matter that is combined with the soil after harvesting. Soil fertility is achieved when organic matter and earthworms are combined. It's sometimes referred to as

"fertility-rich humus." Animal waste known as "cow dung," which may be combined with earthworm, increases soil fertility. The cake is still utilized as a source of energy in rural areas. Cow dung is the finest organic manure for plants since it contains nitrogen, potassium, and other nutrients. Cow urine is utilized in both the phenyl and herbal production processes.

Cow dung bio-gas is an alternative wood fuel that eliminates the need to chop down trees. Cow dung cakes are utilized in yagana performances to convey good vibrations. Cow dung cakes are also used to make the "vibhuthi" that certain religious groups consume. Our local businesses export organic manure made from cow dung to places where it is in high demand. The decomposing chicken manure improves soil fertility as well. Fruit may be utilized to make health drinks, jellies, jams, juices, and other products if it is grown to its full potential.

3.1. The resource effects of agricultural waste

By converting agricultural waste into a resource, we can avoid deforestation, boost exports, reduce pollution, and improve soil conservation. We are also the best organic fertilizer when we use agricultural waste, which includes cow dung. Instead of chemical fertilizers like urea, organic fertilizer found in agricultural waste may be utilized to decrease reliance on chemical fertilizers and reduce chemical fertilizer imports from other countries. In India, the slaughter of cows is prohibited under the constitution. And with this organic manure, we may have a nice trade.

3.2. Agricultural Waste Management System (AWMS):

Agricultural waste management (AWM) has only lately been a topic of discussion among policymakers concerned with ecological agriculture and long-term growth. Environmental discharge, with or without treatment, was the most prevalent waste management strategy in agriculture. To avoid contaminating air, water, and land resources and preventing the transmission of hazardous materials, wastes should be seen as potential resources rather than as undesired and unwanted wastes. This will involve greater use of innovation and motivators, a shift in mindset and behavior, and improved methods for dealing with agricultural waste management. Natural waste, particularly critter fertilizer that is improperly managed or left untreated may wreak havoc on air, soil, and water quality. Stale garbage is a breeding ground for flies and a source of disease transmission. Uncontrolled natural waste degradation generates musty gas and alkali volatilization, resulting in acidic rain. Concerns are growing as animal production intensifies in a small area:

- Higher nitrogen and phosphorus water quality;
- Manure pathogens and antimicrobial agents;
- Ammonia, methane and nitrous oxide emission foul odors and air quality;
- Potassium, phosphate loads quality soil.
- Water quality.

AWMS (Air, Water, Soil, Plant, and Animal Resources Management System) is a "Schematic system for all the necessary components to be set up, managed, and utilized in a manner that maintains or enhances air, water, soil, plants, and animal resources." This kind of arrangement is produced throughout time by using the complete framework approach, which is to supply nourishment for all of the horticulture development buildups. The Total Solids (TS) convergence of agricultural waste is the most important characteristic of the material's treatment. Environment, creature kind, creature water admittance, and feed type, for example, all have an impact on the amount of TS in discharged compost. For example, dung that has been expelled. Many frameworks may be used to predict or decide on the consistency of trash. By adding water and balancing it off from excess water, the waste's TS convergence may be extended. The TS fixation

is important since it affects the total amount of trash that must be handled. Fluid waste frameworks are often easier to robotize and treat than solid waste frameworks; nevertheless, the fundamental cost of fluid handling gadgets may be greater than that of solid waste frameworks. The AWMS system is made up of six main functions. Production, collecting, storage, processing, transmission, and usage are all examples. The amount and kind of agricultural waste generated is a function of output. If enough trash is generated to constitute a resource issue, it must be treated. The kind, coherence, volume, time, and location of the trash produced are all taken into account throughout the whole production study. The first garbage collection and collecting from its source or disposal must be included in the collection.

The collection method, location of collection points, collection scheduling, work requirements, equipment or facilities required, cost of managing and installing the components, and the impact of collections on waste consistency should all be included in the AWMS plan. The storage function is concerned with temporarily storing or holding trash. The storage space of the waste management framework controls the booking and timing of framework capacities, such as waste treatment, application, or utilization, which can be influenced by weather conditions or interfered with other tasks. The waste management framework should determine the capacity time frame, stockpiling volume, kind, evaluated size, and location, as well as plant expenses for the capacity plant, stockpiling measure executive costs, and the impact of capacity on waste rationality.

Any characteristic designed to decrease pollution or waste toxicity, including physical, chemical, and biological treatment, as well as enhance its potential side use, would be considered treatment. This directly shows operations such as waste feature analysis before to discharge; waste feature identification after treatment; treatment type selection, projected size, location, and building costs of a treatment facility; and process budgeting process. Based on the quantity of solid concentration, waste transfer is described as a solid, fluid, or sludge from the compilation to the utilization stage. Rubbish disposal has shown to be beneficial, since it allows for the recycling of reusable wastes as well as the release of non-reusable garbage particles into the atmosphere(10,11).

3.3. AWM with a '3R' Approach:

Reduce the quantity of trash produced, reuse waste goods with simple treatments, and recycle waste as a resource for the creation of the same or changed products to reduce waste volumes and negative consequences. As illustrated in Figure 3, it is often referred to as 3R. Some waste items may be utilized as raw materials for the production and recycling of new or recycled goods. When trash is re-used frequently, it balances the harvest of new comparable or identical goods. This cuts down on the usage of fresh resources and trash generation. To summarize, the 3Rs collectively and individually save new resources, contribute constructively to existing resources, and significantly decrease waste and its negative effects. The 3R concept (waste reduction, resource conservation, and product recycling) is designed to decrease waste efficiency by:

- Choosing to use things in a methodical way to minimize waste produced.
- The usage of articles or parts of articles that are nevertheless helpful in nature on a regular basis.

Agriculture is the process of producing food and other commodities. Perhaps it is man's oldest gift to humanity's survival and well-being. Agribusiness has grown from a modest beginning as a collection of foods to a massive, innovation-driven sector. With the growing global human population comes the expansion and use of knowledge gained from areas such as research, innovation, and even math or law to farming. For many years, industry and horticulture have caused both developed and agrarian countries to be pushed back by the temperature and the climate. To combat these uprisings, researchers and chairmen rely on administrative sciences.

Because of the widespread interest in agro-science, there is a wealth of information available on different aspects of the present state of agriculture. The United Nations' Food and Agriculture Organization produces best-in-class studies on a regular basis to assist organizers and leaders in understanding and managing horticulture problems. Modern farming methods have unquestionably had a major role in increasing food production all over the globe.

At the same time, agribusiness is a major source of environmental pollution and trash production, as well as other emerging characteristics. Both linked agricultural outcomes are the consequence of a huge number of activities and resources used to improve competence and create global agribusiness. For example, the conversion of vast swaths of waste land into arable land, the turn of events, and thus, groundwater assets, the misuse of inorganic manures, the informal use of pesticides, and the acceptance of competing agro methods have all resulted in generally irreversible climatic changes..

4. DISCUSSION

Farm waste is discarded rather being appropriately used, resulting in a slew of environmental issues. Many individuals will be able to expand their agricultural and biofuel supply thanks to the widespread usage of agriculture and biofuel. There is a lot of room for companies to recycle and create waste goods for agro-waste recycling. To spend more time on proper waste management with the help of specific research center cycles, science, and innovation. Many ranchers have no clue how to properly dispose of horticulture debris. Some of them consider the waste's reuse and board, and they make proper use of it. Controlling waste entails a number of methods for reducing waste, earning money, and creating jobs. Timberland and rural waste are important for soil richness, as well as bioenergy and mechanical biotechnology. These waste products are used for construction materials, heat generation, design, and a variety of other purposes. Some cutting-edge technology is being put to good use in the repurposing of agricultural and ranger service waste. Agribusiness ranchers and the general public should be aware of various waste management techniques in order to establish a bright and strong waste management system. Private businesses are conducting meticulous efforts to increase knowledge of the use of agro-waste and to encourage recycling, with the help of NGOs. A few instances are as follows:

- Keeping people aware about the environment around them, including polluted rivers, air, and land; paying close attention to new environmental policies.
- Particularly, refrain from burning trash.
- Informal agro-waste management activities and linkages.
- Information on product recycling, marketing, and distribution.
- Separate trash collection, transportation, and recycling systems.
- Say "no" to plastic bags.
- Encouraging people to start a vermiculture bin for biological waste.

A healthy and fresh environment may be created by reducing agro-waste. Saucer and bright India progress may be aided by effective agro-waste strategies, well-timed strategic planning, and meticulous planning.

5. CONCLUSION

Rural trash is the result of primitive agricultural production and fabrication, and it may include valuable materials. Creating non-items and preparing yields. The buildups come from a variety of cultivating activities, such as yields, cultivation, and hydroponics. Waste may be converted into useful resources for human and agricultural use if properly managed, as shown by information on agrarian waste management systems such as the "3Rs." It is critical not to assume that proper

waste recovery, storage, management, transportation, and disposal is a sign of health. The proper disposal of trash will aid in the expansion of our farming area and provide a variety of biofuel resources. The greatest idea before the world today is the conversion of agricultural waste into a resource, which is utilized to generate foreign currency, improve soil fertility, and prevent deforestation. It is sufficient to state that in order to address waste problems, we need a more robust, well-coordinated, and essential waste avoidance system. Existing frameworks are important, rather than trying to haphazardly replace them with made-up nation models. To avoid any event and to make each city a sound city financially and environmentally, India urgently need an all-around defined essential waste administration strategy and solid execution. The characteristics and shortcomings of the local area and metropolitan organization, which enable a productive waste administration framework to develop with the collaboration of various partners in India, should be dissected deliberately to achieve monetary manageability, financial and natural focuses in waste management executives. Efforts to raise public awareness and instructional measures may help to alter public opinion. Local area affectability is also critical for the above-mentioned goals, and we must act quickly, since every city in India is today a hotspot of many infectious diseases caused mostly by inefficient waste management.

REFERENCES

1. Bories C, Borredon ME, Vedrenne E, Vilarem G, Agamuthu P. Challenges and Opportunities in Agro-waste Management : An Asian Perspective What is AgroWaste ? J Environ Manage. 2009;

2. Devendra C. Perspectives on animal production systems in Asia. Livestock Science. 2007.

3. Mmereki D. Current status of waste management in Botswana: A mini-review. Waste Management and Research. 2018.

4. Nascimento RM, Pinto AEM. Sustentabilidade e Precaução: Uma Avaliação do Plano Municipal de Gerenciamento de Resíduos de Macaé Referenciados na Política Nacional de Resíduos Sólidos. Rev Direito da Cid. 2018;

5. Madinah N. Solid Waste Management System: Public-Private Partnership, the Best System for Developing Countries. Nabukeera Madinah Int J Eng Res Appl www.ijera.com. 2016;

6. Zhang X, Endo M, Sakamoto T, Fuseya R, Yoshizaki G, Takeuchi T. Studies on kuruma shrimp culture in recirculating aquaculture system with artificial ecosystem. Aquaculture. 2018;

7. Ghosh PR, Fawcett D, Sharma SB, Poinern GEJ. Production of high-value nanoparticles via biogenic processes using aquacultural and horticultural food waste. Materials. 2017.

8. Rizwan M, Saif Y, Almansoori A, Elkamel A. Optimal processing route for the utilization and conversion of municipal solid waste into energy and valuable products. J Clean Prod. 2018;

9. Berlowska J, Binczarski M, Dudkiewicz M, Kalinowska H, Witonska IA, Stanishevsky A V. A low-cost method for obtaining high-value bio-based propylene glycol from sugar beet pulp. RSC Adv. 2015;

10. Obi F, Ugwuishiwu B, Nwakaire J. Agricultural Waste Concept, Generation, Utilization And Management. Niger J Technol. 2016;

11. Broitman D, Raviv O, Ayalon O, Kan I. Designing an agricultural vegetative waste-management system under uncertain prices of treatment-technology output products. Waste Manag. 2018;