
A REVIEW ON GREEN PRODUCTS FROM AGRICULTURAL WASTE FOR SUSTAINABLE ENVIRONMENT

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ABSTRACT

Various cultivation processes, such as the use of pesticides, fertilizers, and animal waste, can result in the production of agricultural wastes. These substances can be utilized to produce useful products or used as a source of energy. Various environmental effects are associated with the production of agricultural wastes. This paper aims to provide information about the different types of agricultural wastes and their utilization. It also highlights the past studies done on their conversion. The goal of this study is to increase the value of agricultural wastes by developing new industries that can use them for making value-added products. This can help boost the employment opportunities of farmers. In addition to this, the study also highlights the various trends that can be adopted in the management of agricultural waste.

Keywords-Agricultural waste, biomass, sustainable, utilization.

INTRODUCTION

The organic waste that agriculture produces includes animal excreta, such as manure, slurries, and farmyard waste. It is composed of various types of waste products that contribute to air pollution, water contamination, and soil fertility. Reduce the use of unnecessary and harmful waste products.

Agricultural waste management is part of the ecological cycle in which everything is cycled and recycled such that an interdependent relationship is maintained in the ecosystem. By waste management all the agricultural wastes are placed at the right place and right time for the best utilization in order to convert in to useful products and pollution control.

Utilization of agricultural waste is very important concern especially when the world scenario of energy demand gap is being reported. The resolution to mitigate this gap use of biomass to being investigated so that it can be used as an alternative source of energy production and some commercial products. Lots of work has been reported regarding utilization of biomass. A few studies conducted in this area are as under.

Converting Wood and paper waste in to Ethanol

Dr. Irving S Gold Stein has developed a process using Conc. HCl for converting the cellulose content of wood and paper waste in to ethanol.

In this process proper proportions of HCl and cellulose are mechanically agitated at 500C, a complete breakdown– hydrolysis is possible. After hydrolysis, electro dialysis removes and reclaims HCl from the sugar for reuse. The remaining sugar solution contains a very high concentration of Glucose from which ethanol is fermented and distilled.

Use of Waste paper to slick oil-

When a giant tanker breaks up, thousands of tonnes of oil are spilled in to thesea. A new way of using waste shredded paper to clean oil slicks. If the shreds are find enough, the paper will absorb 27 times of tis own weight of oil.

Paper from agricultural waste Agricultural-waste as raw material-

Studies conducted at various research institutes in India have shown the possibility of using agricultural wastes in combination with waste paper, cotton wastes, etc. for manufacture of document paper, high grade stationery card sheets, album papers, filter papers and electrical insulating papers.

Future scope –

In India about 350 hand made paper mills making paper. It is hardly 0.6% of the total production of paper in our country. Development of such small scale industries would not only solve the problem of waste disposal but also the problem of rural unemployment.

Utilization of agricultural waste-

An agricultural waste sugarcane bagasse is a chief source of cellulose, but it is burnt away as a cheap fuel. For better economy, it is an essential step to get some byproducts like protein from waste materials, which will not only solve the protein deficiency, but also reduces the wastes.

Recently studies show that the feasibility of utilizing the coffee waste in production of bricks. In this methodology, control brick and three different percentages of coffee waste 1, 3 and 5 percent, bricks were manufactured and fired at 1050°C. The properties like shrinkage, density, compressive strength were considered.

Wheat Waste-

Straw is a byproduct of wheat crop, which can be used for making many products like particle board and other products like broomsticks, dry flowers, mats, hats, carpets, and other handicrafts.

Cotton Waste-

Cotton stalk after picking of cotton is used as fuel, it can also be used in biogas production by treating it anaerobically. CH₄ were produced from cotton stalks, cotton seed hull and cotton oil cake in presence of basal medium.

Horticulture waste-

Damaged or spoiled fruits, vegetables, dead plants, branches, leaves are the horticultural wastes. Various chemicals viz citric acid, lactic acid, acetic acid can also be extracted from wastes. Potato residue can also be used for extraction of pectin.

Waste saw dust can be used for removal of methylene blue dye which has adverse impact on photosynthesis in aquatic environment.

Recent studies prove the effective utilization of Neemas natural absorbent in treatment of dairy products. Studies show the feasibility of utilizing wheat bran, agricultural waste to produce bio alcohol. It also demonstrated the utilization of agricultural waste in stabilizing land fill soil. The main constituents of material was palm oil ash and rice husk ash as a sustainable substitute instead of using traditional Portland cement.

Medicines from agricultural wastes-

Furan compounds occur widely in nature which are cheap raw materials. Furfural is readily obtainable from agricultural wastes like corn cobs and oat hulls. It is produced commercially by the reaction of corn cobs with sulphuric acid and is the basic material used for the nitrofurans. These are important germicides

Nitrofurazone or furacin is now being used for treatment of eye, ear, sinus diseases, post-surgery skin infection. Nitrofurans and a related form furoxone are widely used in treating poultry diseases. Furan-ether exhibits germicidal properties against molds which cause great damage to crops and animals.

Recovery of Heavy metals from agricultural waste-

In recent years the presence of toxic heavy metal ions in agricultural waste has attracted the attention of scientists. Metal like Hg, Pb, Cd, Cu, Zn, Ni, Co, Mn, and As even in trace quantities are extremely toxic. Many mining and manufacturing concerns are finding it extremely difficult to meet economically and increasingly stringent limits imposed by WHO on the metal ion concentration in the waste streams.

Liquid fuels from Agrowaste-

Prof. B.S. Hartley has reported that agricultural waste has the potential to become a major source of liquid fuels. The key technology of making transport fuels from agro waste is fermentation. The waste contains a large amount of cellulose and hemicellulose which can be broken down into sugars and then fermented into alcohol, usually called bioethanol.

CONCLUSION

In the past the agrowaste and biomass, obtained due to crop production or from plant growth, were destroyed by burning or naturally converted into organic fertilizers, or allowed to decay in public places in open air creating environmental pollution. Thus by managing these crop wastes in a well planned manner we can maintain a healthy environment for all living creatures. Nowadays biomass produced from agrowaste is used to generate energy as it carries great potential to be converted into energy. Newer developments in technology in process and product development are necessary to increase the economic values of the products. More research and renovation in the existing technologies are required for sustainable use of agrowaste and a healthy environment.

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