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RESEARCH ARTICLE

Scope of Agricultural Solid Waste in Sustainable Development in India

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ABSTRACT:
The present paper shows an agro waste of Rice and wheat straw and husk, Cotton stalk, Saw mill waste, ground nut shell, banana stalk and jute, sisal and vegetable residues are produce yearly in millions of tones from Indian agriculture, if we use this waste in energy production and compost manure which is best option for chemical fertilizer and renewable source of energy.

KEYWORDS: Solid Waste, Sustainable Development, somg, Agriculture .

INTRODUCTION:
[4]Climate change is the major confront in front of the world and it is necessary to discuss.[1]The Present paper describe atmospheric chemistry leading to global warming and unravel the cost of global warming. [5]Agricultural Solid waste is major Contributor in pollution .[3]Recently in the news the in our national capital and majority of north India in winter season, smog is major problems, which affect life of peoples some reason behind is that in north india the period between harvesting season an sowing season in kharif and ruby is less and so farmer burns agricultural waste of crops ,due to lack of time and that waste accumulate in the atmosphere in the form of smoke and this dust combine with moisture which. [9]In order fully to understand the popular global warming debate, one must appreciate the distinction between the greenhouse effect and the enhanced greenhouse effect. Scientists agree that there is a greenhouse effect that causes the earth to be warm.

[11]This effect occurs because greenhouse gases such as carbon dioxide, water vapour, nitrous oxide, and methane are transparent to the short wavelength radiation from the sun but opaque to the longer wavelength radiation emitted from the earth . [14]In simple terms, greenhouse gases trap the heat from the sun and this warms the earth. [1]The popular global warming debate concerns whether humans, through their additions of greenhouse gases to the atmosphere, Scientists do not dispute that the increase in equivalent CO2 has occurred. [8]Since the Industrial Revolution, equivalent CO2 levels have risen from approximately 290 ppm to nearly 440 ppm in1994 . Humans do not, however, contribute to the main absorbers of infrared light in the atmosphere.[6] Water vapour and clouds are responsible for over 98 percent of the current greenhouse effect contribute to the greenhouse effect that occurs naturally.[7] The idea that humans are enhancing the natural greenhouse effect dates to an article written by Svente Arrhenius in 1896. In this article, Arrhenius presents calculations suggesting that a doubling of carbon dioxide (CO2) could lead to a temperature rise of around 5ºC.

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The contribution of agricultural waste to climate change

Currently, India produces 106.19 million tonnes of rice a year from 44 million hectares of land which produces about 150 millon tones waste. [10]That's a yield rate of 2.4 tonnes per hectare, placing India at 27th place out of 47 countries in the world. If Indian agricultural productivity was at these rates, we could produce 205.52 million tonnes and 160.01 million tonnes of rice, respectively. [3]As far as wheat is concerned, India has a higher yield rate than for rice, but it still lags a large part of the world. With 93.51 million tonnes of wheat from 29.65 million hectares which produces about 150 million tones of waste, India's yield rate of 3.15 tonnes per hectare places it 19th out of 41 countries. Here, we do better than Brazil's yield rate of 2.73 tonnes per hectare, but lag behind South Africa (3.4 t/ha) and China (4.9 t/ha). If India's wheat productivity was at these countries' levels, it would be producing 101.22 million tonnes and 147.53 million tonnes of wheat, respectively.

[2]The moisture present in atmosphere and smoke particle of burned crops mud formed smog in large amounts which creates major problems in north india .Agriculture creates both direct and indirect emissions of pollutants in environment.[4] Direct emissions come from burning of solid waste of crops i.e plants parts like roots, stem, leaf etc. which is burn by farmers after cultivation during harvesting periods which is traditional in our country which is responsible for increases CO_2 and other gases like nitrous oxides emissions in our environment and with dust particles and create smog by combining with moisture

Agriculture waste as a solution for climate change

[11]Global adoption of organic agriculture (OA) has the potential to sequester OA is a production system that sustains the health of soils, ecosystems and people. Wheat has been cultivated for several thousand years in India. [6]Wheat grains have been found in the Mohenjadaro excavations. These have been identified as belonging to *Triticum aestivum* sub-species *sphaerococcum*, characterized by spherical shape and dwarf plant stature. From the days of Mohenjadaro up to the dawn of India's Independence in 1947, the country developed the capacity to produce about 6 million tonnes of wheat. It produce large amount of waste materials which is direct burned by our farmer which causes serious problems in environment from long year ago. [13]Therefore these waste can be utilize in compost production and power generations. Composting is one of the options for treatment of solid waste. [15]In composting process the organic matter breaks down under bacterial action resulting in the formation of humus like material called compost.[9] The value of compost as manure depends on the quantity and quality of feed materials poured into the compost pit. Composting is carried by following way.

Production of Fuels and Electricity.

Fossil fuel combustion is the major source of GHG emissions. [9]The agricultural sector can help reduce reliance on fossil fuels in several ways. [3]Agricultural lands can be used as sites for generation of electricity via wind power, reducing the need to generate electricity from fossil fuels. In addition, use of plant materials and animal waste as an energy source can help reduce reliance on fossil fuels. Plant materials can be used either to generate electricity or to produce transportation fuels. [7]Unlike the release of CO_2 from fossil fuel combustion, CO_2 released during combustion of plant materials and animal wastes is counterbalanced by the CO_2 that plants remove from the atmosphere during photosynthesis. [14]However, the overall net GHG benefits of ethanol are uncertain due to GHG emissions from the farming, transportation, and conversion methods currently used in the U.S.

[8]Where large amounts of animal wastes are available in a concentrated location, as in large confined animal feeding operations (CAFOs), CH_4 can be captured and used to generate electricity. [6]The most significant constraints to utilization of animal wastes for power generation are: the rates offered by utilities to medium-scale independent power producers; lack of access to capital; lack of appropriate farm-scale technologies; lack of standardized connection requirements; and lack of metering" requirements. [12]Options for Biofuels and Bioenergy — i.e., use of plant materials and animals wastes to produce energy — include:

Aerobic decomposition

[4]In this process, micro – organisms oxidizes organic compounds in the solid waste to carbon-dioxide, nitrite and nitrate. The carbon from organic compounds is used as a source of energy while nitrogen is recycled. Due to exothermic reactions, temperature of the mass rises.[3] Manure from composting gives better yield to farmers and it is also environment friendly.[12] Bio degradable solid waste can be composted either in compost pit or in a vermi compost.

Anaerobic decomposition

[13]When biodegradable organic solid waste is subjected to anaerobic decomposition, a gaseous mixture of Methane (CH_4) and Carbon-dioxide ($C0_2$) known as Biogas could be produced under favorable conditions.

The end products of Bio-Gas Technology are.

1) Biogas production which is a mixture of Methane (55-65%), Carbon-dioxide (35-45%), trace amount

of Hydrogen, Hydrogen Sulphide and Ammonia. It is a combustible gas and can be used for heating, lighting, powering irrigation pump, generating electric power and for local use for cooking purpose. The gas is smokeless, environment friendly and efficient fuel.

2) [12] Left over slurry: Environmental friendly manure would be produced which can be used as organic fertilizer for gardening and agricultural purpose. It can be used to enrich the soil. It can also be dovetailed to vermin composting to enrich mineral value of compost.

CONCLUSION:

From above study we can conclude, the ecofriendly generation of energy and agriculture fertilizer. India has opportunities to produce energy which contribute in sustainable development in our country without harm in environment.

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