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Biotechnology For Clean Environment

ABSTRACT

Today we are facing the problem of global warming environment polluted rapidly by human activities. We are unable to stop this but we are able to find the alternative way to reduce global warming there are several way to reduce the global warming but the first is awareness to the people. Then plantation of trees then search substitute of fuels that cause low pollution. Like biodiesel from jatropa as a replacement of conventional fuels. Vermiculture technology can also help to reduce the pollution from environment. The potency of Vermiculture technology should made aware to farmers so that they can composts their solid wastes by simple mean of vermitechnology.

Key words: Vermiculture and organic farming; high food production without agrochemicals.

Global Warming, Dust Storms, Soil Erosion, Severe Climate Change, and excessive use of chemical fertilizers could be reduced, all with the same solution? What if this same solution could convert any organic waste to a valuable resource that could increase crop growth up to 20% in less time and without the use of inorganic fertilizers? What if 336 trillion fewer kg of carbon in the form of carbon dioxide were to be in the air as a part of this solution? What if this solution was a fraction of the cost and saved tremendous amounts of energy to what we do today? What if the solution was as simple as the "redworm". Composting is ineffective without worms which then become Vermicomposting. Vermicomposting of Municipal Sludge creates an odorless, pathogen free Class A biosolid that can be used as a rich source of nutrients to plants and add soil carbon to the land. It can be land applied and unlike Class B biosolid, with virtually no restrictions due to its low content of metals, pathogens, and accumulation of nutrients over time. The worm castings speed up seed germination, reduce plant diseases, increase crop yields, reduce leaching and ponding, and provide readily available nutrients to the soil. Increased soil carbon reduces greenhouse gas emissions, and glues the sand, silt, and clay together to reduce soil erosion. Using "Vermistabilization" reduces costs of present practices 50% or more and saves landfill space and use of incineration alternatives that waste energy and pollute the air.

The chemical and biological properties of soil under organic farming (using vermicompost) and chemical farming (using chemical fertilizers-urea (N), phosphates (P) and potash (K)). The study was made in Bihar, India where the farm soil is partly sandy being located in the Indo-Gangetic Plain. Natural fertility of the soil is eroded due to heavy use of agrochemicals over the last 50 years. With continued application of vermicompost the organic nitrogen tends to be released at constant rate

from the accumulated 'humus' and the net overall efficiency of nitrogen over a period of years is considerably greater than 50% of that of chemical fertilizers. Availability of phosphorus is sometimes much greater than that from inorganic fertilizers. The search for alternatives to fossil fuel has seen a rush towards biofuels. This is contributing to rising food prices and increasing concern about our ability to grow enough food and fuel. Despite social and environmental concerns and unproven climate benefits of biofuels, the EU has set a target of 10 per cent road of transport fuel to come from biofuels by 2020. Against this backdrop, jatropha (*Jatropha curcas*) has been promoted by UK biofuel company D1 Oils as a wonder crop because of the plant's ability to grow on marginal and semi-arid land, saying "it will not compete with food crops for good agricultural land".¹ Local non-government organisations (NGOs) have raised concerns about the social and environmental impacts of jatropha and studies have questioned some of the claims made about jatropha's benefits.

This report highlights those concerns for media and policy makers and questions some of the claims being made by D1 Oils and others for biofuel from jatropha. This report looks at D1 Oils' activities in Swaziland, one of the countries where the company is leading the development of jatropha plantations. The report is based on first-hand evidence from farmers involved with D1 Oils and desk research on the impacts of jatropha. By revealing major problems with jatropha production as a biofuel crop. Vermin means earthworms and culture means rearing or farming, much the same as other specialized farming (e.g. fish farming or aquaculture, etc.) Which involves the following steps: procuring of seed stock, culture of proper variety and providing optimum food, moisture, and air and temperature

conditions? “Vermi” is Latin for Worm. Vermicomposting or worm composting is using red wiggler worms to decompose organic household wastes into a useful soil conditioner.

Vermicomposting involves bio-oxidation and stabilization of organic material through the interaction between earthworms and microorganisms. Although microorganisms are mainly responsible for the biochemical degradation of organic matter, earthworms play an important role in the process by fragmenting and conditioning the substrate, increasing the surface area for growth of microorganism and altering its biological activity. Although heavy metal pollution of soil causes biological problems, such as genotoxicity to living organisms, including human beings, few methods have been developed to assess metal mutagenicity in soil. To avoid metal mutagenicity, an adequate bio-monitoring method is required. Earthworms can be used as a bio-monitor of metal contamination in soil. Biofertilizers are commonly called as microbial inoculants which are capable of mobilizing important nutritional elements in the soil from non-usable to usable form by the crop plants through their biological processes.

For the last one-decade, Biofertilizers are used extensively as an eco-friendly approach to minimize the use of chemical fertilizers, improve soil fertility status and for enhancement of crop production by their biological activity in the rhizosphere. Extensive research was carried out on the use of bacteria (Azotobacter and

Azospirillum) and VAM fungi as Biofertilizers to supplement nitrogen and phosphorus fertilizers and observed considerable improvement in the growth of several crop plants. Plant pesticides are pesticidal substances that plants produce from genetic material that has been added to the plant. For example, scientists can take the gene for the Bt pesticidal protein and introduce the gene into the plant’s own genetic material. Then the plant, instead of the Bt bacterium, manufactures the substance that destroys the pest. Both the protein and its genetic material are regulated by EPA; the plant itself is not regulated.

Conclusion

Today world is facing three critical problems: (1) high fuel prices, (2) climatic changes and (3) air pollution. Currently there are several important problems to be resolved worldwide: (1) high need for energy, (2) high depletion of non-renewable energy resources and (3) high local and global environmental pollution. Avoid loss of high biodiversity land. Avoid loss of high carbon-stock land. Environmental requirements for agriculture. Diversification of feedstock. Biodiversity criteria aimed to ensure: No use of raw material from: Forest undisturbed by significant human activity, Highly biodiverse grassland, Nature protection areas, unless compatible with nature protection.

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