



Miracle of earthworms in the service of man and environment : resolve food, waste and water problems, provide medicines for combating deadly human diseases and mitigate global warming

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Abstract: A revolution is unfolding in 'vermiculture biotechnology' for achieving quicker and cheaper solutions to several environmental, economic and social problems plaguing the human society from sustainable 'waste management' (converting waste into resource), 'land and soil remediation' to 'safe, chemical-free and health protective food production' (without recourse to dangerous agro-chemicals). Vermicomposting of solid wastes can divert 60-70 % MSW from landfills. Vermifiltration involves very 'low energy' and there is no formation of 'sludge' which plagues all conventional STPs. Vermiremediation is 'on-site' without earth cutting and soil excavation. Earthworms and their excreta (vermicast) are 'miracle growth promoters' producing highly nutritive and health protective foods while also protecting crop plants from pests and diseases. We have successfully experimented in 'vermicomposting of solid wastes', 'vermifiltration of 'municipal

and industrial wastewater', 'vermiremediation of chemically contaminated soils' and 'vermi-agroproduction of cereal and vegetables crops' with amazing results. Wastes are degraded by over 75% faster, BOD and TDSS of wastewater is reduced by over 95%, PAHs from contaminated soils are removed by 80 % in just 12 weeks, and growths of crop plants are enhanced by 30–40% higher over chemical fertilizers by vermicompost.

Sir Charles Darwin wrote that 'no other creature on earth has done so much for mankind' as the earthworms. Their role as 'waste and soil managers', and 'plant growth promoters' were known for long, but some 'new discoveries' about their role in 'wastewater treatment', 'remediation of chemically contaminated soil', and more recently about their potential use in modern medicine for protection of 'human health' from some deadly diseases like 'cancers and cardiovascular diseases' and as a rich source of 'high quality protein' have brought a revolution in the vermiculture studies.

Key words: Waste Vermi-composting; Wastewater Vermifiltration; Vermi-remediation of Chemically Contaminated Soil; Vermi-agriculture Production of Organic Foods; Vermi-industrial Production of Medicines and Materials; Earthworms – Chest of Medicines for Heart Diseases and Combating Cancers; Earthworms Bio-accumulate, Biodegrade and Bio-transform Chemicals; Earthworms Disinfect and Detoxify Environment; Earthworms Mitigate Global Warming and Climate Change.

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