

Full Length Research Paper

Embarking on a second green revolution for sustainable agriculture by vermiculture biotechnology using earthworms: Reviving the dreams of Sir Charles Darwin

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Vermiculture biotechnology promises to usher in the ‘Second Green Revolution’ by completely replacing the destructive agro-chemicals which did more harm than good to both the farmers and their farmland. Earthworms restore and improve soil fertility and significantly boost crop productivity. Earthworms excreta (vermicast) is a nutritive ‘organic fertilizer’ rich in humus, NKP, micronutrients, beneficial soil microbes - ‘nitrogen-fixing and phosphate solubilizing bacteria’ and ‘actinomycets’ and growth hormones ‘auxins’, ‘gibberlins’ and ‘cytokinins’. Both earthworms and its vermicast and body liquid (vermiwash) are scientifically proving as both ‘growth promoters and protectors’ for crop plants. In the experiments with corn and wheat crops, tomato and egg-plants it displayed excellent growth performances in terms of height of plants, colour and texture of leaves, appearance of flowers and fruits, seed ears etc, as compared to chemical fertilizers and the conventional compost. There is also less incidences of ‘pest and disease attack’ and ‘reduced demand of water’ for irrigation in plants grown on vermicompost. Presence of live earthworms in soil also makes significant difference in flower and fruit formation in vegetable crops. Earthworms biomass, a byproduct of VBT is rich in ‘high quality protein’ and source of nutritive feed materials for fishery, poultry and dairy industries and also for human consumption.

Key words: Earthworms and vermicompost, plant growth promoter, plant protector, improve soil fertility, combat plant diseases, repel pest attack, earthworm biomass, protein feed, medicines.