

The Role of Bacterial Diversity of Vermicompost on Soil Fertility ,Plant Nutrition and Agricultural Wastes Management

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Abstract

Vermicompost production is a non-thermophilic process in which the activity of earthworms and microbial oxidation accomplished by microbes involved in .This biological organic waste decomposition process yields the biofertilizer namely the vermicompost. Vermicompost contains excreta of earthworms and the finished product decomposition of organic matter by certain species of earthworms in partnership with useful flora of the gastrointestinal tract of earthworms. Reviewing the results of several studies on the unique features of vermicompost produced by different species of earthworms (over 20 species) showed that the population of microbial soil up to five times and the population flora of the digestive system earthworms was increased up to 1000-fold and useful microbe population up to 10^{10} per gram and the subsequent production of multiple enzymes and beneficial growth was higher. Vermicompost treatment increased the performance of different products and in some cases was higher than chemical fertilizer. In point of plant health and health product vermicompost was increased product quality up to 50 percent and reduce the absorption of heavy metals in soils that vermicompost was applied. Vermicompost application was controlled diseases and a variety of phytopathogen such as rhizoctonia, phytophthora, fusarium, verticillium and etc, by adding beneficial microbes and increases the resistance of plants and was reduced the consumption of agricultural pesticides. Biological diversity in vermicompost is so important that in some studies the use of sterile vermicompost can not control various diseases such as fusarium and we concluded that disease control of vermicompost is completely biologic closely related to biological diversity of vermicompost. Bacterial diversity in vermicompost directly by increasing the solubility of nutrients, hormones, nitrogen fixation, mineralization of organic matter and the formation of chelates metal vermicompost on particles with high surface area and so increases the yield of various products at least 20 to 70 percent. The result that biological diversity is a significant part of the high efficiency of vermicompost and therefore the culture promotion of production and application of bio-organic fertilizer(vermicompost) is necessary more than ever.

Keywords: Vermicompost, bacteria, organic waste, plant growth promoting, inhibiting pathogens.

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