Organic-Soil Fertility Management

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Abstract

In the twentieth century, modern inputs such as chemicals revolutionized agriculture. However, in less than 50 years of their use in agriculture, it has started showing negative effects. The land degradation, increasing cost of cultivation, pesticides contamination, and environmental pollution etc. has affected consumer attitudes, giving rise to demands for organic products.

In most of the discussions with agriculture scientists, held for exploring organic agriculture development possibilities, nutrients required for cultivation of crops, and their non-availability from natural source gets the center stage and is therefore also considered as a major constraint.

To sustain the soil productivity on long-term basis, micronutrients deficiency, organic matter contents, and microbial population of the soils have started to receive attention only under organic management. The source of waste material and its conversion into compost plays an important role in deciding composting method under organic management.

In the mid nineties, the Morarka Foundation was extensively focused on organic matter recycling as a substitute for chemical fertilizers to reduce the cost of cultivation. It carried out research work to understand the natural process of recycling comprising of activities by bacteria, fungi, actinomycetes, earthworms, etc.

In the context of increasing requirements for nutrients from organic sources, scientists at Morarka looked at the conversion efficiency of various technologies, i.e. an increase in nutrients during composting process.

One more important issue that was identified for scientific evaluation in regard to use of compost was related to nutrient availability/contents both at the time of application, as well as nutrients produced by the application of composts through bacterial activities during crop stand.

Vermiculture-compost in this direction has been a pioneering breakthrough in recent times. In a short period of less than ten years of successful development of Vermiculture technology, today in India alone, over 10,00,000 MT of Vermicompost is being produced by over one million organic farmers.

Morarka Foundation has developed biotechnology-based processes to achieve total nutrient content levels of up to 5-8 percent in composts and with further enrichment by bacterial cultures and through mineral amendments to as high as 8-12 percent nutrients in enriched vermicompost.

In case of chemicals, the fertilizer use efficiency, i.e. uptake by the plants, is much lower as compared to the dosage applied by the farmer. This aspect has also been scientifically evaluated by Morarka Foundation to develop package of practices for crops in almost all types of agro climatic conditions in India.

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