Composting as a Management Option for Recycling Organic Wastes

B. Godden
Department of Microbial Physiology and Ecology Universite Libre de Bruxelles, Brussels, Belgium

Abstract

Animal manures, crop residues, and legume crops provide the major sources of plant nutrients in organic farming systems. Often, it is more advantageous to compost animal manures and other farm wastes rather than apply them directly to soil. This paper summarizes results of a study to achieve a better understanding of the composting process, the mechanisms involved, and practical on-farm applications.

The study was conducted using laboratory, bench-scale composters with experimental mixtures of 800 to 1,500 kg. Aerobic, thermophilic composting conditions were maintained which caused a rapid proliferation in the types and numbers of bacteria, fungi and actinomycetes. Population successions of these microorganisms were noted with time, along with changes in the composition of cellulose, hemicellulose and lignin. Soon after composting began, temperatures reached the thermophilic range and then slowly declined to ambient levels indicating that active composting was complete.

Among the advantages of composting are: improved farm sanitation and odor control; destruction of plant pathogens and weed seeds; increased availability of plant nutrients; improved compost quality from mixed farm wastes; and, ease of storing, handling and applying the compost to soil.