

Accelerated Production of Composted Humus with Long-Chain Carbon Polymers



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Executive Summary

Three million tonnes a year of organic waste is currently composted in Australia. Compost Australia estimates up to 20 million tonnes of organic material could be made available for composting each year. This suggests that around 17 million tonnes of organic waste created in Australia is going to landfill. Instead of being used to produce compost to enrich our soil, organic waste in Australian landfill sites is producing methane and nitrous oxide.

Increasing the proportion of organic matter in crop production soils would, over time, deliver substantial improvements in soil structure, greater moisture retention in the soil, improved water penetration and infiltration rates and greater structural integrity aggregation. Improved soil structure in turn means reduced sheet and wind erosion, reduced siltation and sedimentation of water courses, greater soil biological diversity, reduced leaching of nutrients into streams, lakes, oceans and aquifers, lower soil compaction and less need for inorganic fertilisers. Better national health outcomes can then be delivered through improved nutrient content in food products.

Humus is the highly decomposed and stable constituent of the organic fraction in soil. It can take many years to be produced via normal biological and chemical processes. Composting can produce this desirable material within weeks if the process is managed and controlled correctly. There are several ways for organic matter to be rapidly processed into quality compost containing long-chain carbon polymers. Windrow production is used in an agricultural context because of its adaptability to terrain, the volume and availability of feedstock, and reduced complexity in the management of the composting materials. In-vessel production is better suited to situations where a production facility is closer to population centres as it allows for improved management of odour.

A number of key skill deficiencies currently hold back the development of a large-scale accelerated composting industry in Australia. Inadequate knowledge exists to be able to select the specific materials suitable for blending in order to deliver high quality humified compost. Best management practices need to be adopted in accelerated humus production, in particular bulk storage management, accurate interpretation of laboratory analyses of composting material and related microorganisms, and care and maintenance protocols for plant and equipment used in large-scale production.

To help redress these skill deficiencies the Fellow visited Germany, Austria, France and Italy to access the latest composting scientific research, practical techniques and methodologies, and regulatory regimes relating to organic waste recycling and composting production.

The recommendations flowing from the insights and new learnings gained through the Fellow's experience in Europe are aimed at ensuring that over time a significantly increased proportion of the estimated 20 million tonnes of organic waste produced annually in Australia is converted into a value-added, quality assured product that will help reverse the current trend of declining soil structure and fertility in crop production soils across Australia.