

The development of soil physical properties and vegetation establishment on brownfield sites using manufactured soils

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- Received 1 February 2011. Revised 18 June 2011. Accepted 29 June 2011. Available online 9 August 2011.

Keywords

- Green waste compost;
- Bulk density;
- Soil physical properties;
- Meadow grassland;
- Porosity;
- Organic matter

Abstract

The physical properties of natural soils have been researched extensively. However, there is a paucity of information on the short and longer term effects on a manufactured soil after the addition of municipal green waste compost as an organic component. Two field trials were set up using different soil forming materials. Trial 1 (Chorley), added compost to degraded subsoil, whilst trial 2 (Bidston) utilised compost added to a mixture of sand and silt. The trials were established to determine what effect the addition of municipal greenwaste compost had on the development of soil physical properties, and the soils subsequent ability to support vegetation establishment. The compost was introduced as a blend and mulch at varying ratios in an attempt to establish the most appropriate mix to support the establishment of grassland vegetation. It was found that the addition of compost reduced the bulk density proportionally across the majority of the blends at both trial sites which in turn had a positive effect on porosity and infiltration rates. At trial 1 there was evidence of a good suite of meadow plants present in many plots with reasonable similarity to the Natural Vegetation Classification MG5/5a except for the treatment with 33% compost mulch. At trial 2 the soil mixture treatments that supported vegetation most similar to the Natural Vegetation Classification MG5 suite of sown species were the mixes with 15% and 30% compost. The compost mulch treatment and the mix with 45% compost content were probably too fertile as they became dominant with ruderal weed species due to natural succession and inhibited the growth of the meadow plants. Overall, the initial findings of the two trials suggest that adding green waste compost at specific rates could be used as a successful strategy in the early stages of establishing and managing controlled vegetation growth on a manufactured soil.