Case study: Landscape and regeneration

Compost mulch proves its worth in council tree planting scheme

A scientific trial, conducted on a municipal tree planting scheme in North Somerset.
A scientific trial, conducted on a municipal tree planting scheme in North Somerset, has found that quality compost mulch can significantly reduce weed cover and enhance tree growth.

The 12-month trial, which was sponsored by a number of organisations including WRAP (Waste & Resources Action Programme), involved 156 containerised trees planted in a residential road in Nailsea in spring 2007.

The trees involved in the trial were Ginkgo (Ginkgo biloba), Hornbeam (Carpinus betulus), Jaquemontii Birch (Betula utilis ‘Jaquemontii’) and Swedish Whitebeam (Sorbus intermedia).

They were treated with compost that was manufactured to the national BSI PAS 100 specification and was supplied by Viridor Waste Management Ltd in Taunton. The compost was produced mostly from domestic garden waste from Somerset.

Case study findings
Compost was applied as a mulch, as a soil amendment or as a combination of the two. There was also an untreated control plot.

The compost mulch was added as a 50 mm layer to an area of at least 25 cm beyond the edge of the planting pit at a rate of 0.03 m³ per tree. Compost was added as a soil amendment at a rate of 1/5 of excavated soil or 0.15 m³ per tree. The rates were based on commonly used application rates and the trees were irrigated on a weekly basis.

A number of performance measurements were used, including level of weed cover, shoot lateral extension and root growth. The cost of all the activities required for using compost as a mulch and soil improver were analysed per 100 trees.

Keeping weeds under control is very important for young trees since competition for water by weeds is seen as the principle way in which water loss can affect tree physiology and the growth of
shoots and roots. This in turn can have an adverse effect on the appearance of trees and delay their establishment.

The efficacy of mulches can be measured by assessing both weed suppression and tree growth which can provide a reliable guide to moisture levels in urban soils.

The situation is similar for soil amendments, where tree growth can provide a better proxy measure of an urban soil’s water holding capacity, porosity and nutrient status than soil moisture monitoring equipment.

To measure weed cover, the area around the base of each tree was photographed in July 2007 and the percentage of weed cover was calculated to the nearest five per cent in an area of approx 60cm² around each tree.

The use of the compost mulch kept weed cover at about 30 per cent, and represented a 50 per cent reduction in weed cover when compared to the untreated plot.

Figure 1: Compost being used as a soil amendment at base of tree
The use of compost as either a soil amendment or a mulch had a significant effect on tree growth as measured by lateral shoot extension, irrespective of production method or species. However, the best results were achieved with the mulch, where in August 2007 new shoots measured 9.97cm compared to 6.09cm for untreated areas. In February 2008, the shoots in the mulched area were 10.75cm compared to 7.99cm in the untreated plot.

Although the examination of root growth indicated that stock type had a big influence on this, compost produced thicker rooting across the boundary of the root pit.

Compost mulch was also very cost-effective when compared to herbicide use and worked out at £186 per 100 trees compared to £335. Although the overall cost of plastic mulch mats was comparable at £189.50, the compost provided a more sustainable option.

Marcus Bellett-Travers, Managing Director of Trees Project Ltd, which oversaw the research project and is a spin-off company from Nottingham Trent University, said: “The way the trees responded to the compost mulch was very significant. By keeping weeds under control, the mulch provided a good environment for young, transplanted trees which are particularly vulnerable to changes in soil water content.

“Furthermore, the compost mulch proved to be a cost-effective and environmentally attractive alternative to plastic mulches or herbicides, since it is locally sourced and produced and is, at least in part, re-used on the landscapes from which it originated.”

John Flannigan, Trees and Countryside Officer for North Somerset Council, said: “The trial supported anecdotal evidence that compost mulches work and, as a result, we now plan to use compost mulch in all our tree planting schemes. This will involve about 100 trees this year alone.”
Trees Project Ltd plans to undertake further trial work with North Somerset Council to gather further long term evidence on the importance of compost as a mulch and soil amendment. Overall sustainability and costs from tree transplanting to establishment will be reviewed.

**Key Facts About Compost**

- Compost is an excellent source of organic matter, giving soil a more workable structure leading to improved root growth and better tree establishment.
- Compost mulches can act as a protective barrier to the soil surface which helps reduce weeds, retain moisture and control erosion.
- Compost includes beneficial micro-organisms that contribute towards disease suppression.
- Different particle size grades of compost are available for a range of landscaping operations. Finer grades can be mixed in to act as a soil improver or a top dressing. Coarser, woodier fractions are most suitable to act as a stable, effective and long-lasting mulch.

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