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Manufactured soil products — Low density soils

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Definitions

Low density soils are usually blends of mineral and organic components, and will typically have a bulk density in the range of 0.3 to 0.6 kg/L. Organic matter content is generally in the range 10% to 40% by mass (Standards Australia AS 4419, 2002). See Information Sheet No. 3-10, "*Introduction to Australian Standard AS 4419–2002 soils for landscaping and garden use* in the "*Producing Quality Compost*" package of Information Sheets for more details (Recycled Organics Unit, 2002a).

Uses

These soils are generally used on artificial bases, e.g. rooftop gardens, or in large landscape containers.

Benefits

The use of *recycled organic* materials, such as compost, as a component of these mixes not only reduces demand on *natural soil* reserves, but can also contribute to:

- Reduced soil bulk density, allowing for easier handling;
- Improved total water holding capacity;
- Improved air-filled porosity;
- Improved nutrient levels;
- Improved nutrient retention (through improved cation exchange capacity); and
- Improved plant disease suppression properties (Hoitink and Fahy, 1986; Handreck and Black, 1999).

Risks

As low density soils tend to be composed mainly of composts, such soils may require the addition of nitrogenous fertilisers if the composted fraction is low in available nitrogen (e.g. some composts prepared from woody garden organics).

Low density soils that comply with Australian Standard 4419 (2002) are free from weeds or plant/animal pathogenic microorganisms and do not have any phytotoxic effects on plants.

Plate 1. Photograph of an organic soil used for general landscaping purposes.

Additives

The addition of a nitrogenous fertiliser to low density soils that are low in nitrogen ensures that these soils will not cause nitrogen deficiency in plants.

Application rates

Australian Standard 4419 (2002) recommends that low density soils with an organic matter content greater than 20% and a bulk density of less than 0.3 kg/L should not be used in any outdoor landscaping situation, including on-slab situations. Such soils are only suitable for use in tubs and containers.

This is because continuing decomposition of the organic matter in such high organic mixtures may lead to slumping and subsidence, which may not be acceptable in landscaped situations.

Application methods

Soils can added by hand or with a spade. The application of a gravel layer below the low density soil may assist with subsoil drainage.

Definitions*

Recycled organics

The term Recycled Organics has been adopted by Resource NSW as a generic term for a range of products manufactured from compostable organic materials (garden organics, food organics, residual wood and timber, biosolids and agricultural organics).

Natural soil

A soil that has been dug from the landscape and is presented for use with no more than minor amendment. This soil could be topsoil, subsoil or a mixture of them. Typically it will have a bulk density of greater than 0.7 kg/L.

* Recycled Organics Unit (2002b).

Important references

- Handreck, K.A. and N.D. Black (1999). Growing Media for Ornamental Plants and Turf. University of New South Wales Press, Sydney, Australia.
- Hoitink, H.A.J. and P.C. Fahy (1986). Basis for the control of soilborne plant pathogens with composts. *Annual Review of Phytopathology,* 24: 93-114.
- Recycled Organics Unit (2002a). Producing Quality Compost: Operation and management guide to support the consistent production of quality compost and products containing recycled organics. Third Edition. Recycled Organics Unit, internet publication: http://www.recycledorganics.com
- Recycled Organics Unit (2002b). Recycled Organics Industry Dictionary & Thesaurus: standard terminology for the recycled organics industry. Recycled Organics Unit, internet publication: http://www.rolibrary.com
- Standards Australia (2002). AS 4419—Soils for landscaping and garden use. Standards Australia, Homebush, NSW.

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