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An Assessment of the Suitability of Backyard Produced Compost as a Potting Soil

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Current scientific knowledge of compost is largely derived from research into commercially produced green compost. This has shown that such compost tends to have high pH, high conductivity, and potential for organic and/or mineral pollutants and therefore can be problematic for use in growing media at high inclusion rates. Little work has been undertaken at an amateur composting scale and it is unclear whether these problems are prevalent in amateur-produced compost. This paper describes trials assessing the suitability as growing media of different composts produced using a range of amateur gardener methods. The resultant compost was then used to produce potting soil mixes with different compost inclusion ratios (with loam acting as the diluent) and assessed by growing tomatoes and lettuce. When comparing the effects of the compost mixes, the open vessels exhibited significantly higher weed germination counts than the wooden and plastic vessels. Turning the compost also significantly increased the weed count. In terms of seeds (lettuce and tomato), significantly lower germination counts were determined in the undiluted mixes when compared to the diluted mixes earlier in the assessment period. By the end of the assessment period these differences were reduced. By the final harvest, tomato heights and biomass were significantly greater in the undiluted mixes when compared to the diluted mixes and were comparable to the control mixes. Backyard produced compost would appear to have some value as a potting soil but the method of production needs to be taken into account when considering its use.

Introduction

The practice of backyard, home or amateur composting is encouraged by many local and national governments as well as numerous environmental organisations. The waste hierarchy identifies the benefits of diverting waste from the waste stream so composting kitchen scraps and garden waste at home is considered environmentally preferable to disposal in council collection schemes (Smith *et al.* 2004; Illmer and Schinner 1997). Many amateur gardeners recognise the value of the resultant compost and use it directly as a soil conditioner, as a potting soil or as a constituent of a potting soil.

Current scientific knowledge of compost and composting though is largely derived from research into commercially produced green compost and little work has been undertaken at an amateur composting scale. Research has shown that commercially produced compost generally has high pH and high conductivity (Carlile 2008; Rainbow and Wilson 1998; Raviv 1998). In addition, there is potential for organic or mineral pollutants (Bustamante *et al.* 2008; Sanchez-Monedero *et al.* 2004) such as weed seeds (Grundy *et al.* 1998) and heavy metals (Zennaro *et al.* 2005) and all

of these factors can present problems if the material is incorporated into potting soil.

Many potting soil manufacturers have tried to incorporate commercially produced green compost (at varying rates of dilution). As a low volume diluent it has proven to be of value (supplying vital nutrients and ability to hold water) but at high volumes it can be difficult to incorporate and maintain the quality of the growing media as pH, conductivity and weight become difficult to manage (Carlile 2008; Carrión *et al.* 2008; Cendon *et al.* 2008; Surrage and Carlile 2008; Mugnai *et al.* 2007; Waller 2006; Sánchez-Monedero *et al.* 2004; Spiers and Fietje 2000; Rainbow and Wilson 1998; Raviv 1998).

Emino and Warman (2004) described how assessing compost utility required the material to be examined in a plant based system rather than simply using different measurable parameters and many studies have attempted to illustrate the value of different composts in potting media (growing media) mixes. Studies have also highlighted the effect of different source materials even down to a batch by batch variation (Gajdoš 1997; Ozores-Hampton *et al.* 1999). Green compost commonly has high nutrient concentrations (eg. Kahn *et al.* 2005; Ozores-Hampton *et al.* 1999; Gaj-