



Exploring sustainable alternatives to peat: A focus on biochar and compost

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Peat has traditionally and widely served as a growing medium. However, peatlands are important carbon sinks, and peat extraction contributes significantly to GHG emissions [1]. Consequently, research into alternative materials to peat is imperative, along with careful consideration of feedstock characteristics and processing techniques for production of peat substitutes [2]. This study studied the potential of biochar and compost from different agro-waste as viable alternatives by assessing their effects on agronomic properties.

The materials studied included peat, green compost, and two types of biochar. Ten treatments were designed as follows: a control using only peat, and nine mixtures incorporating 10% or 20% biochar, compost, or combinations of both with peat. A germination test was conducted in Petri dishes using seeds of *Medicago polymorpha*, *Lolium perenne*, *Lolium rigidum*, and *Festuca arundinacea*. Following this, two pot experiments were performed to evaluate the effects on soil physical properties, elemental composition, and plant growth. The addition of biochar and/or compost improved the physical properties of the substrates. Biochar significantly increased the total carbon content, whereas compost additions at 10% and 20% resulted in a reduction in carbon content. However, biochar produced from olive pomace, which exhibited high electrical conductivity, negatively impacted germination and plant development. In summary, biochar, whether used alone or in combination with compost, shows promise as a substrate amendment. However, careful selection of feedstock and production conditions is crucial to ensure its effectiveness.

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References:

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