

Concentrated spot application of organo-mineral biochar decreases fertiliser use in organic Ginger production

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Widespread biochar use in Australian and New Zealand farming is minimal due to cost. Newly developed methodologies are emerging to reduce the cost of biochar application for farmers such as creating nutrient rich, organo-mineral biochar complexes. This study investigated the effect of novel organo-mineral biochar fertiliser when applied as a concentrated low dose spot application on ginger (*Zingiber officinale*: Zingiberaceae) using a pot trial. Treatments included organic fertiliser (5 t ha⁻¹) and organo-mineral biochar fertiliser applied as a concentrated spotted application in low, medium and high rates (0.3 t ha⁻¹, 1.5 t ha⁻¹ and 3 t ha⁻¹). Application rates were adjusted based on the recommended P application of organic fertiliser similar to high rate organo-mineral biochar fertiliser (3 t ha⁻¹). We tested the effect of these treatments on plant growth and biomass at harvest after a 30 week growing period.

High rate organo-mineral biochar spot application (3 t ha⁻¹) increased dry stem weight compared to all other treatments. High rate organo-mineral biochar spot application (3 t ha⁻¹) significantly increased above and below ground biomass compared to low rate organo-mineral biochar spot application (0.3 t ha⁻¹). Wet weight of fresh rhizomes (yield) was not different among treatments nor their commercial values (\$AU).

This indicates the potential for reduced (-94%) fertiliser application compared to current practice. Our study suggests that ginger farmers could apply high spotted rate organo-mineral complex as a substitute to current practice or at a lower rate to reduce fertiliser use while maintaining similar yields.