Vermicompost from pig manure grows healthy hibiscus
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Vermicomposting, the practice of using earthworms to turn waste into nutrient-rich fertilizer, can be an economical, organic waste management practice. During vermicomposting, earthworms and microorganisms stabilize organic waste in an aerobic, moist environment. The resulting product, called vermicompost (VC), or worm castings, provides commercial and amateur growers an environmentally friendly alternative to conventional substrate additives for producing many varieties of container-grown plants. A research team recently experimented with pine bark amended with vermicompost derived from pig manure to see if this organic alternative can produce healthy hibiscus.

Michelle S. McGinnis, lead researcher, explained that the purpose of the study (published in *HortScience*) was to determine if conventional nursery crop inputs could be replaced by commercially available vermicompost for hibiscus production. VC is currently marketed as a pine bark amendment to progressive nursery crop producers. Reported benefits include greater plant growth and flower production, improved water use efficiency, and sufficient levels of some plant-available nutrients.

The scientists grew hibiscus (Hibiscus moscheutos 'Luna Blush' L.) in containers containing pine bark amended with sand, dolomitic limestone and micronutrient package (PBS), or pine bark amended with 20% VC. Plants were topdressed with one of three controlled-release fertilizers (CRFs): only nitrogen; nitrogen and potassium; or nitrogen, phosphorus, and potassium (NPK). The PBS + NPK treatment, which was supplied with conventional nursery crop nutrient inputs, served as the control treatment to represent the industry standard.

Plants were harvested at 35 and 56 days after potting. Total plant nutrient contents of phosphorous, calcium, magnesium, sulfur, iron, manganese, zinc, copper, and boron were equivalent or greater by hibiscus-grown pine bark amended with vermicomposted pig manure (20% by volume) compared with plants grown with conventional nursery crop nutrient inputs. All three 20VC treatments averaged 58% and 40% greater plant dry weight than PBS + NPK, respectively, and 93% more flowers than PBS + NPK at 56 days after potting.

The research also established that the vermicompost treatment did not supply potassium equivalent to conventional CRFs; the authors recommend the addition of fertilizer potassium (K) to VC at a 20% amendment rate.

All treatments used equivalent volumes of water. "The drawback of greater effluent nutrient content when using a VC amended substrate could be offset by implementing best management practices, such as the reduction of leaching fraction and/or containment or capture of the effluent", noted McGinnis.

The study suggests that dolomitic lime, sulfated micronutrients, and phosphorous can be eliminated as substrate additives for hibiscus production.

More information: The complete study and abstract are available on the ASHS HortScience electronic journal web site: http://hortsci.ashspublications.org/abstract/44/6/1698

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