

## Abstract

According to previous studies, vermicompost has been found to promote beneficial organisms, nutrient life, transplant growth and disease suppression in potting soils and aqueous extracts. The objective of our study was to test whether food waste-based vermicompost and thermophilic compost produced at Dickinson College Farm, Boiling Springs, PA, would improve productivity when applied to agricultural plants via potting media and extract foliar sprays. Romaine lettuce (*Lactuca sativa* L. var. *longifolia*) and pak choi (*Brassica rapa* var. *chinensis*) seeds were planted with vermicompost-amended, thermophilic compost-amended, unamended, or McEnroe commercial potting media. Compost-amended media contained greater nutrient contents than unamended media. Vermicompost-amended media at 10% had significant negative effects on germination compared to the unamended controls ( $P < 0.001$ ), likely due to ammonium toxicity. However, transplant growth was significantly greater in 10% vermicompost-amended potting media ( $P < 0.001$  for all parameters). Among all assessed on-farm media, optimal transplant growth was achieved with 20%-30% vermicompost and the blood meal mix nutrient amendment. Extracts did not significantly impact transplant growth. The efficacy of vermicompost preparations likely depended on its particular nutrient and microbial content, which can vary from batch to batch. Farm-based vermicompost systems show potential for improving plant productivity and health depending on management and application methods; thus, farms, especially those committed to sustainable, agroecological practices, could benefit from developing on-farm vermicompost systems. However, care should be taken to avoid use of vermicompost batches with high ammonia levels, which can result if compost is removed from the system before reaching maturity.