

Coffee Grounds Potential Use for Small Scale Vegetable Production

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Abstract

Coffee, one of the most valuable commodities in the world, produces large amounts of residues presenting serious environmental problems. The application of espresso coffee grounds (CG) has the potential to be a viable alternative to inorganic fertilizers in small-scale vegetable production. Two experiments were carried out to evaluate the effect of fresh CG amendment in the germination and growth of lettuce (*Lactuca sativa* L.), spinach (*Spinacia oleracea* L.), basil (*Ocimum basilicum*, L.), stevia (*Stevia rebaudiana* (Bert. Bertoni) and vervain (*Verbena sp.* L). Different rates of fresh CG were tested in both experiments, including a treatment where CG were mixed with a mineral NPK fertilizer. Soil application of fresh CG affected germination of all species. Seed emergence was inhibited at the highest rate applied. High CG rates increased organic matter and the substrate nitrogen content but decreased phosphorus and potassium availability. Fresh CG alone significantly reduced dry matter yield and total Kjeldahl nitrogen content in all the species. The mix of CG+NPK promoted plant growth for some species, a higher total Kjeldahl nitrogen content in soil and plants and the highest mineral nitrogen in soil. Application of CG with NPK fertilizer positively impacted crop growth, making this combination an alternative for domestic agriculture rather than using only inorganic fertilizers. The effectiveness of fresh CG as a crop fertilizer was species-specific.

Keywords: coffee-grounds, germination, growth, nitrogen, vegetables

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