

Effects of humic acids derived from cattle, food and paper-waste vermicomposts on growth of greenhouse plants

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Summary

Humic acids were extracted from *cattle*, food and paper-waste vermicomposts using an alkali/acid fractionation procedure which produced 1 g dry wt humates from 400 g vermicompost. They were applied to a soilless growth medium, Metro-Mix 360 (MM360), at rates of 0, 250 or 500 mg humates kg⁻¹ dry wt of container medium, to young marigold, pepper, and strawberry plants grown in pots in the greenhouse. A range of 0, 20, 100, 150, 200, 250, 500, 1000, 2000, 4000 mg of humates kg⁻¹ of container medium was used for tomatoes. *Effects* of the *humic acids* on the plant heights, leaf areas, shoot dry weights, root dry weights of peppers, tomatoes and marigolds and numbers of fruits of strawberries were assessed. Substitution of humates ranging from 250–1000 mg kg⁻¹ MM360 increased root growth of marigolds and peppers, and increased root growth and numbers of fruits of strawberries significantly ($P \leq 0.05$). Leaf areas, plant heights and above-ground dry matter weights increased considerably in plants grown in pots containing *humic acids* but they were not significantly different from those grown in MM360 only ($P \leq 0.05$).

Keywords: Vermicomposts; *humic acids*; plant growth; peppers; tomatoes; marigolds; strawberries