

عنوان مقاله:

Application of rural slaughterhouse waste as an organic fertilizer for pot cultivation of solanaceous vegetables in India

محل انتشار:

مجله بین المللی بازیافت مواد آلی در کشاورزی، دوره 2، شماره 1 (سال: 1392)

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خلاصه مقاله:

Background: The lack of electricity and water supply in rural abattoirs in developing nations prevents the adoption of waste-processing technologies practiced in economically advanced countries. This research attempts to recycle waste blood and rumen digesta generated in rural slaughterhouses as organic fertilizer, thus promoting sustainable agriculture. Results: The values of 5-day biochemical oxygen demand, chemical oxygen demand, total Kjeldahl nitrogen, concentrations of oil, grease, total suspended solids, total solids, and total phosphorus characterized blood and rumen digesta as highly polluting wastes. Waste blood and rumen digesta were mixed in 1:1, 2:1, and 3:1 ratios and dried to obtain 'bovine-blood-rumen-digesta-mixture' (BBRDM). The efficacy of the organic fertilizer was compared with diammonium phosphate (DAP) in a pot cultivation of tomato, chili, and brinjal. Five grams of BBRDM (N/P/K = 30.36:1:5.75)/kilogram of soil applied at the second and sixth weeks produced earlier fruiting by 2 weeks and yielded (in terms of total fruit weight) higher by 130% for tomato, by 259% for chili, and by 273% for brinjal in BBRDM (3:1)-cultivated plants compared to DAP. BBRDM-applied soils showed higher C, N, and P concentrations than DAP. High-nitrogen-containing BBRDM mineralized rapidly, and nitrogen and phosphorus were available within 6 days of drying. Although high nitrogen concentration caused toxicity when applied at the time of planting to young plants, BBRDM enhanced the yield and productivity when applied to mature plants after 15 days of plantation. Higher numbers of Azotobacter, phosphate-solubilizing bacteria, fungi, and amount of chlorophyll were isolated from soils treated with BBRDM than with DAP. Carbohydrate, protein, and fat contents of the vegetables were comparable to DAP-grown vegetables.

کلمات کلیدی:

Slaughterhouse, Bovine-blood-rumen-digesta-mixture, Tomato, Chili, Brinjal, Organic fertilizer

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