عنوان مقاله:

Feasibility of mango by-products and biogas solid residue aerobic co-composting at different C/N ratios

محل انتشار:

مجله بین المللی بازیافت مواد آلی در کشاورزی, دوره 13, شماره 1 (سال: 1403)

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خلاصه مقاله:

Purpose: Co-composting of mango by-products and biogas solid residue eliminates some shortcomings of compostingthese wastes separately. Specifically, co-composing solves the problem of the low pH values in mango by-products whileenhances biodegradable organic matter of biogas solid residues. However, no research report is available on co-composting of mango by-products (MB) and biogas solid residue (BR).Method: This study established three in-vessel lab-scale composting bins with ۳ different C/N ratios, including Bin ۱:۲۷.۴/۱ (۱۵۶ kg MB + ۱۴۴ kg BR); Bin ۲: ۳۰.۲۳/۱ (۱۹۳ kg MB + ۱۰۷ kg BR); and Bin ۳: ۳۷.۷/۱ (۲۲۴ kg MB + ۷۶ kgBR). The raw compost materials underwent ۵۷ days of incubation, including ۳۶ days of raw incubation and ۲۱ days ofmineralization.Results: Bin ۳ containing larger amounts of mango by-products and less amounts of biogas residue showed a higherpercentage of remaining carbon in the final products (۱۷.۹۷%), lower nitrogen loss (۱۷%), and showed ۰.۵% increase inavailable P۲O۵ content, compared to the other bins. From ۳۰۰ kg of initial raw material, the final compost mass in Bin ۱,Bin ۲, and Bin ۳ were ۲۶.۲ kg, ۳۲.۷ kg, and ۸۸.۱ kg, respectively.Conclusion: Resultantly, an initial C/N ratio of ۳۷.۷/۱ could .be suggested in the aerobic co-composting of biogas residuewith mango by-products

کلمات کلیدی:

Biogas solid residue, Co-composting, Humus, Mango byproducts, C/N ratio