

عنوان مقاله:

PERIODIC MUNICIPAL COMPOST AND SEWAGE SLUDGE APPLICATION ON ACCUMULATION OF HEAVY METALS IN SOIL AND PLANTS

محل انتشار:

اولین کنفرانس بین المللی و چهارمین کنفرانس ملی بازیافت مواد آلی در کشاورزی (سال: 1390)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

In arid region, land applications of organic matter, in the form of compost and sewage sludge improve soil physical and chemical properties; and provide a mean for disposal of them. However, the possibility of contamination of arable lands by heavy metals from municipal compost and sewage sludge should be studied. Municipal compost and sewage sludge are heterogeneous organic matters that include residual of various disposed materials. The possibility of the presence of heavy metals in municipal compost and sewage sludge even in small quantity increase the risk of soil and plant contamination. A field study carried out in Rodasht Agricultural Research Station, to determine the effects of compost and sludge application on soil and plants. In a four years sugarbeet, corn, onion and wheat rotation, the effects of the municipal compost and sewage sludge, on accumulation of heavy metals in soil and plant were studied, in a randomized complete block design with three replications. The amendment treatments were two compost rates (25, 50 Mg ha⁻¹) and two sludge rates (15, 30 Mg ha⁻¹) and a check (none). The results showed that application of 50 Mg ha⁻¹ compost produce the highest yields, and the other treatments, except 15 Mg ha⁻¹ sludge ranked next. However, the highest biological yield produced by 50 Mg ha⁻¹ sludge application. The continuous amendment application during the experiment improved soil chemical fertility. The highest available P and K were resulted from the highest level of sludge and compost application rates, respectively. Compost application sharply increased Pb concentration. In 50 Mg ha⁻¹ compost treatments, Fe concentration was the highest and in sludge (30 Mg ha⁻¹), soil Cu and Zn reached to the highest level during experiment. Finally, no clear trends of heavy metal accumulation found due to addition of soil amendments.

کلمات کلیدی:

municipal, compost, sewage, heavy metals, sugarbeet, corn, onion, wheat

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