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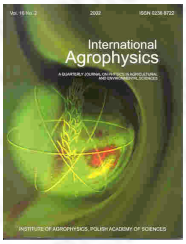

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Soil surface properties affected by organic by-products

(get PDF)

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abstract The beneficial effects of amending soils with organic by-products include improvement of both chemical and physical factors. Very few studies have investigated changes in the soil specific surface area (SSA) after amendments with manures or composts. Soil samples were taken from plots before and after four years application of manures, composts or nitrogen fertilizer. A corn-wheat-soybean rotation was grown. Soil samples were tested for changes in water retention at 15 bar, bulk density, C content and SSA using nitrogen gas adsorption at 73 K. Both the increase in water retention and decrease in bulk density were related to total organic matter amendment. Increases in SSA were noted in all soils sampled. SSA changes were not related to either C increases or ash amendments. An amendment of crab waste compost increased SSA most, i.e., soil C increased by 4.45 m2 g 1. The fertilizer increased SSA to 0.5 m2 g 1 soil C increase. Although the calcium mineral content of crab waste compost may be the prime factor in the increasing of SSA, no single factor appeared to explain the increase of SSA in these field soils.

keywords soil specific surface area, compost, water content, N fertilizer, organic by-products