

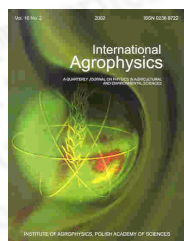
International Agrophysics
Polish Journal of Soil Science
Acta Agrophysica
Instytut Agrofizyki

International Agrophysics

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International Agrophysics

publisher: Institute of Agrophysics
Polish Academy of Sciences
Lublin, Poland

ISSN: 0236-8722

vol. 22, nr. 3 (2008)

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Effects of turning frequency on composting of chicken litter in turned windrow piles

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vol. 22 (2008), nr. 2, pp. 159-165

abstract Composting of chicken manure mixed with sawdust (chicken litter) was performed using the turned windrow method. The aim was to investigate the effects of turning frequency on some physicochemical properties of chicken litter. The three turning frequency treatments were: no turning, turning every 3 days and every 7 days. The initial physicochemical properties of chicken litter were determined. The moisture content of the treatments was adjusted to 55% (w.b.) at the beginning of composting and no moisture adjustment was done thereafter. The results showed that turning frequency did not affect ($P>0.05$) pH, temperature, rate of composting and maturation time, but it affected ($P<0.05$) moisture content, dry matter, total carbon, total nitrogen and carbon to nitrogen ratio of composting piles. Losses were observed in moisture content (61.82-75.8% of the initial moisture content), dry matter (7.68-13.01% of the initial dry matter), total carbon (51.71-62.24% of the initial total carbon) and total nitrogen (45.36-79.61% of the initial total nitrogen). The losses of total carbon were attributed to organic matter degradation, while those of total nitrogen were largely attributed to ammonia (NH_3) volatilization. Moisture loss and C:N ratio increased as turning frequency increased. All the treatments reached maturation at about 70 days, when the pile temperatures dropped to near ambient temperature. C:N ratio increase and losses in total carbon and total nitrogen were significantly higher in the turned windrows (treatments TF7 and TF3) than in the unturned windrow (treatment TF0). In conclusion, the short maturation time was attributed to low moisture levels in the piles.

keywords composting, turning frequency, moisture content, total nitrogen, total carbon, C:N ratio

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