STUDY THE DECOMPOSITION RATE OF COMPOST UNDER DIFFERENT COMPOSTING TECHNIQUE

Punam Lal Kerketta, R.K. Bajpai and Anup Kumar Paul

Indira Gandhi krishi vishwavidalaya Raipur (C.G) India Email: anupfmkvk@rediffmail.com

Abstract: The experiment was carried out during the December 2007 to March 2008, at instructional farm of Indira Gandhi Krishi Vishwavidyalaya, Raipur.Different composting techniques were used - 1, one perforated pipe method 2. two perforated pipe method 3. Three perforated pipe method. 4. U shape perforated pipe method 5, turning method 6, traditional method 7. NADEP method, the changes in different physical, chemical and biological parameters was studied at 30, 60, 90 and 120 days after filling. Treatment under aerobic decomposition of paddy straw, soybean straw and fresh cow dung and soil were taken into5:2 ratios for each pit. EC and moisture content were found under the NADEP method of composting. The bulk density, ash percent increased with days of decomposition progresses and maximum increase was found at 120 days. The highest pH recorded in NADEP method of compost (7.0, 9.0, 8.2 and 7.7) at 30, 60, 90, and 120 days respectively, while the lowest pH was recorded on the traditional method of composting (5.56, 7.1, 6.7 and 7.0). The highest EC was recorded in traditional method of compost (1.4 dS m⁻¹) at 120 days.

Keywords: Bulk density, EC, moisture, pH, temperature

REFERENCES

Atchley, S. H. and Clark, J. B. (1979). Variability of temperature, pH, and moisture in an aerobic composting process. *Applied and Environmental Microbiology*, 38(6): 1040-1044.

Baker, J. M. and Allmaras, R. R. (1990). System for automating and multiplexing soil moisture measurement by time-domain reflectometry. *Soil Science Society of America Journal, 54: 1-6.*

Bakshi, M., Gupta, V. K. and Langar, P. N. (1987). Effect of moisture level on the chemical composition and nutritive value of fermented straw. *Biological Wastes*, 21: 283-290.

Characklis, W. G. and Gujer, W. (1979). Temperature dependency of microbial reactions. *Prog. Water Technol. Suppl.*, 1:111-130.

Dean, T. J., Bell, J. P. and Baty, A. J. B. (1987). Soil moisture measurement by an improved capacitance technique (I): sensor design and performance. *Journal of Hydrology*, 93: 67-78.

Ekinci, K., Keener, H.M. and Elwell, D.L. (2000). Composting short paper fiber with broiler litter and additives. *Compost Science and Utilization*, 8(2), 160–172.

Gaur, A.C. (1987). Recycling of organic wastes by improved techniques of composting and other method. *Resources and Conservation*. 13: 613-621

Hall, S. G. (1998). Temperature feedback and control via aeration rate regulation in biological composting systems. *Ph.D. Dissertation*, Cornell University, Ithaca, USA.

Iriarte, M. L. and Ciria, P. (2001). Performance characteristics of three aeration systems in the

composting of sheep manure and straw. Journal of Agricultural Engineering Research, 79 (3): 317-330.

MacGregor, S. T., Miller, F. C., Psarianos, K. M. and Finstein, M. S. (1981). Composting process control based on interaction between microbial heat output and temperature. *Applied and Environmental Microbiology*, 41 (6) : 1321-1330.

Stentiford, E.I. (1996). Composing control: principles and practice. In: *The Science of Composting*, eds. M. DeBertoldi, P. Sequi, B. Lemmes, and T. Papi, Blackie Academic and Professional, London, UK, pp. 49-59.

Taiwo, L.B. and Oso, B.A. (2004). Influence of composting techniques on microbial succession, temperature and pH in a composting municipal solid waste. *African Journal of Biotechnology*, 3(4): 239-243.

Thomas, G.W. (1996). Soil pH and soil acidity in Sparks. In D.L. et al., *Methods of Soil Analysis*, Part 3, Chemical Methods, Chapter 4, p. 475-490, Soil Science Society of America, Madison, WI.

Vuorinen, A.H. and Saharinen Maritta, H. (1999). Cattle and pig manure and peat co-composting in a drum composting system: Microbiological and chemicals parameters.*Compost Science and & Utilization*, 7 (3): 54-65.

Weeken, A.H.M., Adani, F., Nierop, K.G.J., de Jager, P.A. and Hamelers, H.V.M. (2001). Degradation of biomacromolecules during high rate composting of wheat straw-amended feces. *Journal of environmental quality*, 30:1675-1684.

Zhang, Z. (2000). The effects of moisture and free air space on composting rates. *M.Sc.Thesis*, Iowa state university, Ames, USA.