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Production and Efficient Use of Composts from Animal Husbandry Wastes and Urban Sludge

M. Dumitru, Nicoleta Vrinceanu, M. Motelica, Veronica Tanase, Vera Carabulea

National Research and Development Institute for Soil Science, Agrochemistry and Environment, Bucharest, Romania (e-mail: mdumitru@icpa.ro / Phone:+40213184349/3184360, fax: +40213184348)

Research was carried out in two experimental fields, one on the phaeozems soil in the Teleorman Agricultural Research and Development Station (SCDA Teleorman), and the other on the Luvisol in the Albota Agricultural Research and Development Station (SCDA Albota).

The raw material for preparing the composts was the cattle manure in the case of SCDA Teleorman experimental field, and the sewage sludge in the case of SCDA Albota, as carbon source being used the straw, hashed at 2–5 mm size.

To rapidly start the fermentation, the composting material was treated with bio-preparates formed of microbial cultures selected from the families: meso-and thermophilic *Enterobacteriaceae*, *Pseudomonodaceae*, *Bacilaceae* and *Actinomicetes*.

The composting process lasted 3 months.

The experimental treatments included:

- factor A: fertilization with compost in a rate equivalent with 0, 100, 200, 300 and 400 kg N/ha and
- factor B: mineral fertilization at rates of O, $N_{50}P_{50}$ and $N_{100}P_{100}$.

The compost obtained from cattle manure was characterized by: moisture 50%, nitrogen – 1%, phosphorus – 0.6%; potassium – 1.2%, sodium – 0.2%, calcium – 0.8%,

magnesium – 0.4%,
zinc – 110 mg/kg, copper – 60 mg/kg, manganese – 400 mg/kg, iron – 7800 mg/kg.

The compost obtained from the sewage sludge had the following average characteristics: pH 7.07, organic carbon – 18.38%, total N – 2.24%, P – 1.29%, Cu – 130 mg/kg, Zn – 1367 mg/kg,
Pb – 80 mg/kg, Ni – 27 mg/kg, Mn – 345 mg/kg and Cd – 4.2 mg/kg.

The content of heavy metals in these organic products, accepted for the agricultural land is:
10 mg/kg Cd, 50 mg/kg Co, 500 mg/kg Cu, 1200 mg/kg Mn, 100 mg/kg Ni, 300 mg/kg Pb and 2000 mg/kg Zn.

The winter wheat yield on the phaeozem in SCDA Teleorman increased as the compost rate increased such as: 1915, 2963, 3381, 4148 and 4870 kg/ha with the equivalent compost rates of
0, 100, 200, 300 and 400 kg N/ha, respectively.

With the same compost rates, the maize kernel yield increased as follows: 6104, 7765, 8911, 9377 and 9391 kg/ha, respectively.

In the case of Luvisol in Albota, the oats yield increased as follows: 1659, 2121, 2260, 2410 and 2516 kg/ha with rates of compost obtained from sewage sludge equivalent with 0, 100, 200, 300 and 400 kg N/ha.

On the same soil, with the same rates of compost, the maize yield increased as follows: 5867, 6014, 6119, 6234 and 6393 kg/ha.

The paper presents also data regarding the compost fertilization in influence on soil chemical characteristics.

Also detailed data on composting process are presented.