Nuryanto, Effect of Length Incubation Manipulation of Thermophilic Phase on Rice Straw and Market Wastes Composting on Compost Product, under the guidance of Yanisworo Wijaya Ratih and Lelanti Peniwiratri.

ABSTRACT

Rice straw is the stem and leaves of rice as a field crop residues. Rice straw are most widely available raw material for composting. However, decomposition of rice straw take along time because of its high lignin content. These problem can be overcome by manipulating the legth incubation of thermophilic phase during composting. The present study was conducted to determine the effect of manipulating the length incubation of thermophilic phase on rice straw and market wastes composting on compost product. The study was conducted in two stages. The first stage was done to evaluate bioactivactor microorganism capability to degrade the raw material at thermophilic condition. It was set in a randomized complete block design, three treatments for each raw material, i.e J40: rice straw, incubation at 40°C; J45: rice straw, incubation at 45°C; J50: rice straw, incubation at 50°C, and SP40: market wastes, incubation at 40°C; SP45: market wastes, incubation at 45°C; SP50: market wastes, incubation at 50°C. The second stage was set in a randomized complete block design, four treatments for each raw material, i.e J0: rice straw composting, 0 week incubation of thermophilic phase; J1: rice straw composting, 1 week incubation of thermophilic phase; J2: rice straw composting, 2 weeks incubation of thermophilic phase; J3: rice straw composting, 3 weeks incubation of thermophilic phase, and SP0: market wastes composting, 0 week incubation of thermophilic phase; SP1: market wastes composting, 1 week incubation of thermophilic phase SP2: market wastes composting, 2 weeks incubation of thermophilic phase, and SP3: market wastes composting, 3 weeks incubation of thermophilic phase. The parameter which was observed in the first stage was $C0_2$ production, while on the 2nd stage were C, N, C / N, pH, color, and amount of lignin-degraded. The results showed that the CO_2 production of J50 and SP50 treatments was the highest. Addition of incubation time of thermophilic phase (50^0C) during rice straw composting, reducing the level of C and increasing the amount of lignin-degraded, but not affecting the C/N ratio and pH, whereas in market wastes composting, these addition reducing the level of C and C/N, increasing the amount of lignin-degraded, but not affecting the pH.

Keywords: composting, termofil phase, rice straw, market waste