

## ABSTRACT

Household kitchen waste HKW is produced in large amount and it is very difficult to treat it because of its higher moisture content and complex organic structure. Aerobic composting of KW at household level is easy to operate, efficient and cost-effective method to treat KW. In this study, KW was composted aerobically at household level by optimizing starting conditions on the basis of KW size and bulking agents. Six treatments were arranged as C1 (70% cut KW + 30% fallen leaves), C2 (70 % crushed KW + 30% fallen leaves), C3 (70 % cut KW + 30% saw dust), C4 (70% crushed KW + 30% saw dust), C5 (70% cut KW + 30% fly ash), C6 (70% crushed KW + 30% fly ash) and composted for 32 days. Physio-chemical analysis (Temperature, pH, MC, OM, C/N ratio, EC, WHC, GI, TK, TP) were measured for each treatment. Then all composts were used to grow green chilli (*Capsicum annum*) plant to analyze comparative impacts of compost on soil (WHC, Porosity, Aggregate Stability) and plant growth (Plant height, no of leaves, root & shoot fresh weight) after 40 days of planting. The results showed that, higher and longer thermophilic phase (55 C) for 11 days was observed in C2, higher MC reduction (69%) and higher OM degradation (38.40%) was also observed in C2. The pH range in all treatments was 7-8.5, EC range was 1.8-3.55 mS/cm, C/N ratio range was 15.4-18.1, WHC range was 3.25-4.3 g water/g dry sample, TK range was 1.52-1.61%, TP range was 0.23-0.32%. Higher GI (119.1%) was also obtained by C2. The highest plant height (16.7 cm), greater no of leaves (20), greater shoot fresh weight (4.75g) and root fresh weight (1.2g) was obtained by C2. Similarly, greater WHC (2.8 g water/g dry sample), higher porosity (55.49%) and higher aggregate stability (54.14%) of soil was also obtained by C2. The final values of all parameters in each treatment were according to limit values and results of plants and soil analysis exhibited mature and phytotoxic free compost.