

Effects of Liquefied Kitchen Garbage on Weeds and Crop Growth

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Abstract : *Kitchen garbage accounts for almost 50% of the total wastes produced in the households, 20% from offices and probably higher in schools and restaurants. Disposal of waste containing kitchen garbage is becoming a problem because of their high moisture content. Recycling of kitchen garbage for agricultural uses is considered a safer and economical approach in waste management. Effective microorganisms (EM) technology paved the way to a simple and economical method of waste management by converting biodegradable wastes into nutrient-rich organic fertilizers through the fermentation-decomposition process. Liquefaction combined with EM technology is being looked into as an alternative method of processing kitchen garbage. Also, the effect of the liquefied kitchen garbage with EM on weed and crop growth had been evaluated. Liquefied kitchen garbage was processed at 1:1 garbage-water ratio plus 3% EM-1 and 3% molasses. The treatments were fermented and unfermented compared with water applied at 5 l/m². Fermented and unfermented materials applied as weed pre-emergence reduced the population and biomass of sedges under zero tillage. Under minimum tillage, fermented material reduced the population and biomass of sedges while the unfermented increased them. On the other hand, fermented liquefied kitchen garbage enhanced the growth of grasses while unfermented liquefied kitchen garbage reduced the growth of grasses in both tillage operations. Post-emergence application of fermented and unfermented liquefied kitchen garbage increased the population and biomass of sedges under minimum tillage. They also reduced sedges under zero tillage. The fermented material had higher degree of effectiveness than unfermented. Both treatments suppressed broadleaves under both tillage operations, while grasses were suppressed under minimum tillage. Under zero tillage, grasses were reduced by using fermented material but were increased by unfermented ones. Fermented kitchen garbage processed at 1:1 and 1:5 garbage-water ratio applied at the same rate on mulched plot suppressed the growth of broadleaves and grasses, and sedges but also reduced the yield of santousai by 49% to 85%.*

Fermented liquefied kitchen garbage reduced weed population by 82-100% using 2.5-10 t ha⁻¹ on silty loam soil and 7.1-42% using 2, 4 and 6 t ha⁻¹ in clay soil on simulated rice paddy. Fermented liquefied kitchen garbage applied at the time of transplanting suppressed the growth and tillering of rice seedlings. The biomass was reduced by 50%. Transplanting of rice seedlings one month after treatment application had reduced the negative effect on the growth of rice plants.
