

The findings in the waste audit studies are summarized below:

- i. The main components of process wastes generated by the facility are glycerol residue and wastewater sludge, with daily production of 1.0 tonne and 3.0 tonnes, respectively.
- ii. Scheduled waste generated was more than 1.17 tonnes per day, excluding the generation of glycerol residue.
- iii. Non-process wastes generated by the facility included paper (959.98 kg), plastics (140.3 kg), glass (43.1 kg), metal (150.4 kg), organic waste (340.6 kg), and others, which total up to 2892.824 kg every month.
- iv. The recycling and reuse of wastes involved approximately 64.5 % of the total waste generated monthly.
- v. The total waste generation, particularly the non-process wastes can be reduced with the practice of waste prevention, reduction, reuse and recycling.

The composting trials of the waste generated by the company indicated that:

- i. Wastewater sludge from the wastewater treatment plant of the company can be composted by itself with frequent aeration and regular mixing process.
- ii. The composting of wastewater sludge accelerated with the addition of goat manure, sewage sludge and soil.
- iii. Glycerol residue can only be composted if it was added in a small percentage of less than 4% into the compost combinations.

The planting trials conducted showed that:

- i. Compost from i) wastewater sludge and goat manure, ii) wastewater sludge, sewage sludge and soil, iii) wastewater sludge, sewage sludge and spent grain and iv) from wastewater sludge, goat manure and glycerol residue (10:10:1), produced crops with higher leaf numbers than plants with inorganic fertilizer.
- ii. Also, the utilization of the compost derived from wastewater sludge, sewage sludge and soil, and compost from wastewater sludge, goat manure and glycerol residue (10:10:1) to plants, yielded crops with better weight and height compared to plants with inorganic fertilizer.

The benefits of composting the wastes (wastewater sludge and glycerol residue) are as below:

- i. Reduction in waste management and disposal costs by more than RM 162 000 annually, particularly in wastewater sludge disposal.
- ii. Compost prepared can be commercialized to earn RM 457 920 annually.