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## Luxembourg

# Composting Biosolids, Yard Trimmings And Bark

A two-stage composting process in Diekirch — designed for 15,000 tons/year — may soon be replicated in Germany, Belgium and France.

## Karsten Runge

A SMALL country with about 420,000 inhabitants, Luxembourg has the same problems as its neighbors in solving the problems of solid waste and wastewater. Many wastewater treatment plants were set into operation to protect large rivers from pollutants. But a new challenge appeared with this positive trend — biosolids management. First, biosolids were directly land applied for agricultural purposes, but with increasing volumes and concern over pathogens, other methods have been investigated in countries like Belgium, France, Germany and Luxembourg. Composting biosolids in a more continual process with high temperatures has become increasingly popular. Now "Soil Concept," an interregional approach dealing with sludge valorization through composting has been partially financed by the European Commission and involves several companies from Luxembourg, Belgium and Germany.

The "Soil Concept" process is adaptable to any site working with windrows or silos and uses a semipermeable cover. Forced aeration, regulated by temperature and oxygen content of the feed-



**After feedstocks are turned, forced aeration process begins for initial four-week composting. Second stage is completed on an outdoor surface within eight more weeks.**

stocks, is used to improve stability of the end product.

The initial pilot plant began operations near Diekirch early in 2001. Feedstocks included municipal biosolids, yard trimmings and bark. Input capacity of the plant is about 15,000 tons/year; current-

ly, about 8,000 tpy are being processed.

Incoming material is stored in a roofed area, and yard trimmings are shredded. The composting process takes place first in silos that are 4.5 meters wide, 2.2 meters high, and about 25 meters long.

A layer of bark is spread on the bottom of the silo to protect the distribution channels of the forced aeration system. In the second stage, shredded yard trimmings and biosolids are roughly mixed with a special bucket of the loader and then placed into the silo. The average volume of the mixture is 40 percent biosolids, 10 percent sandy residues, 25 percent yard trimmings and 25 percent bark.

When the silo is full, the turning machine (Backhus) mixes everything together. After the silo has been covered with a semipermeable membrane, the forced aeration process starts. The flow of fresh air is automatically controlled with continuously working temperature and oxygen probes. The material is turned several times, and after four weeks the first stage of composting is finished.

A front-end loader unloads the silo and fills it again with fresh input material. The second stage of composting is completed on an outdoor surface within eight more weeks. After that, the compost is screened with a Neuenhauser star screener. Use of the final product depends on the size of the screen: 0.10 mm for gardens and parks; 0.25 mm for agricultural use; and 0.50 mm for erosion control on highways.

After a year and a half of successful operation, the pilot project has turned out to be practicable, easy to operate and safe. Final products have found their markets and have had a high acceptance. The plant owners are planning to copy this system and operate more facilities in Luxembourg, Germany, Belgium and France. ■

*Karsten Runge is with Backhus Kompost-Technologie, which is based in Edewecht, Germany. For more information about the Luxembourg plant, visit [www.soil-concept.lu](http://www.soil-concept.lu).*