



## Cuba

# New Emphasis On Managing Organic Residuals

Shift to sustainable agricultural methods in Cuba leads to vermicomposting, urban food production and biopesticide research.

**Britt Faucette**

**BEFORE** its import and export markets were completely upset by international developments in 1990, Cuba's use of chemical fertilizers and pesticides ranked among the highest in the world. Years of agricultural subsidies from the Soviet Union were immediately terminated. With very little international trade, sustainable agriculture became a primary policy along with a goal of self-sufficiency. Optimum use of organic matter and organic residuals became part of the plan.

According to information gathered as a participant in an international sustainable agriculture delegation to Cuba, the 1997 Law of the Environment included strong emphasis on composting and organic matter management. A network of 172 vermicomposting operations spread throughout the country, with five agricultural experiment stations established to train and provide technical assistance to vermicomposters in their region. National production of vermicompost increased from 2,000 metric tons in 1987 to over 93,000 metric tons in 1992. Feedstocks are mostly cow manure, sheep and swine manure, sugarcane production and processing by-products, rum distillery by-products, coffee pulp and plantain residues.

Cuban agronomists claim that four tons/ha of worm castings can produce the

same quality tobacco harvest as 40 tons/ha of cow manure. In addition, the same amount of vermicompost can increase soil nitrogen levels by two percent. Almost every state-owned dairy and cattle operation has some experience with vermicomposting. Excess worms are harvested for supplemental protein in animal feed.

### Urban Farms And Organics Recycling

The Cuban government is reported to be trying to move its agricultural base from rural areas to urban centers in order to reduce transportation, mobilize its dense urban population into a labor force, decrease farm size and inputs, and take advantage of the concentration of organic fertilizers and materials. Over the past decade, many state-owned vacant lots were given to cooperatives, institutions, and neighborhood groups for urban food production. A federal law prohibits use of agrochemicals on urban farms, which supply 60 percent of Cuba's vegetable consumption.

The Centers for Organic Matter in Urban Agriculture are a national system of state-run facilities whose goal is to compost urban and industrial organic residuals, distribute them to urban farms, and provide technical assistance in organic matter management. There is one center

in every province of Cuba that sources material, collects, composts, screens, and delivers the finished product in bulk or bags, or in flats for greenhouse production. The main feedstocks for the Havana operation include animal manures, sugarcane by-product and rice hulls.

### Organics Resource Recovery Programs

Cuba's resource and by-product recovery program incorporates aerobic composting, vermicomposting, anaerobic digestion for methane collection, and animal feeding. Feedstocks include animal waste, food residuals, sugarcane production and processing residuals, rum distillery by-products, citrus and juice processing residuals, coffee pulp and processing residuals, and crop residues.

Twenty-five percent of the organic residuals from rum distilleries are composted. The sugarcane processing industry produces between three to five million tons/year of organic residuals. The sugar by-product, "filter press cake," is high in phosphorous, potassium and calcium and is used in land application as organic fertilizer. The bagasse, or dry pulp, is mainly used for animal feed and on-site biogas production for the processing facilities. Wastewater from 152 processing plants irrigates nearby sugarcane fields. Livestock operations use citrus and juice processing by-products, sugarcane processing residuals, slaughterhouse waste, and food residuals (1.2 million tons since 1990) as feed supplements.

The Agricultural University of Havana has a Department of Sustainable Agriculture. Much emphasis has been put on a national biofertilizer plan that researches and produces green manures, N-fixing bacteria, P-solubilizing bacteria, and mycorrhiza fungi to offset the decline in commercial fertilizer availability. ■

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