METER
ENVIRONMENT

LYSIMETERS DETERMINE IF HUMAN WASTE COMPOSTING CAN BE MORE EFFICIENT

In Haiti, untreated human waste contaminating urban areas and water sources has led to widespread waterborne illnesses such as typhoid, cholera, and chronic diarrhea. Sustainable Organic Integrated Livelihoods (SOIL) has been working since 2006 to shift human waste as a threat to public health and source of pollution to being a resource for nutrient management by turning solid waste into compost. This effort has been critical to sustainable agriculture and reforestation efforts, as topsoil in Haiti has severely eroded over time, contributing to Haiti's extreme poverty and malnutrition.

WHY COMPOST?

Topsoil erosion in Haiti was estimated to be 36.6 million metric tons annually in 1990, and it is estimated that only one sixth of the land currently cultivated in Haiti is suitable for agriculture. SOIL combats desertification by producing over 100,000 gallons of agricultural-grade compost made from human waste annually. SOIL research has shown that this compost can increase crop yields by up to 400%. The organization has sold over 60,000 gallons of this compost to local farmers and organizations, increasing soil organic matter and nutrients throughout the country.

HOW DO THEY DO IT?

SOIL distributes specially constructed toilets throughout Haiti that separate urine from solid waste. Odors are reduced by covering the solid waste with organic cover material. The toilet utilizes a five-gallon bucket to collect solid waste that can be swapped out when full.

The five-gallon buckets are collected weekly and taken to the composting facility, where they are dumped into large composting bins. It takes about 1500 buckets (3-4 days worth) to fill each bin. Bins are required to reach 122°F and left for 2.5 months in order to kill all pathogens.

The compost is then removed from the bin and turned by hand. There are three concrete slabs used to manage the finishing process. Compost is turned horizontally and then moved forward to the next slab, allowing multiple batches to be finishing at the same time, each at a different stage. After processing, the compost is sifted, bagged, and sold, reinvigorating the agriculturally-based Haitian economy.

G3 Drain Gauge lysimeter

LYSIMETERS HELP ASSESS HEALTH HAZARDS

SOIL will use METER passive capillary lysimeters in an upcoming experiment to determine if composting human waste without a barrier between the waste and the soil will result in ecological and/or health hazards. Why? The problem is "jikaka," or "poo juice." The compost facility currently redistributes it onto the compost and finishing piles, but they would rather not have to manage it. They believe if they remove the concrete slab and allow composting to occur in contact with soil, the composting process will be easier and faster.

THE EXPERIMENT

The organization will test their idea as they expand their facility. New compost bins and staging areas for finishing have been built absent concrete pads. METER G3 passive capillary lysimeters have been installed, three beneath the compost bin, and four beneath the first staging area for finishing. They will be used to monitor the amount of moisture (jikaka) that travels through the soil as well as check for anything harmful that travels with it.

WHAT'S THE FUTURE FOR KONPÒS LAKAY?

SOIL's agricultural team studies the use of their compost (Konpòs Lakay) in order to optimize farming practices and the economic benefits of targeted compost application. The data they collect will help them expand the market for Konpòs Lakay, which in turn will support the sustainability of SOIL's sanitation programs.

Discover the G3 lysimeter