

## Organic Waste Management in Barbados

By: *Kesner Dabady, Priyanka Kapadia and Twisha Kini*

Mentored by: *Danielle Donnelly*

Worldwide, there are one billion people who suffer from chronic hunger (FAO, 2013). This is not a problem of supply but rather one of access, or lack thereof. The reality is that there is enough food to feed the global populace; but there are many who do not have the economic or social means to gain access to this food supply. This disconnect is also exacerbated by global wastage of food. According to the Food and Agriculture Organization of the UN (FAO, 2011), one third of food produced, or roughly 1.3 billion tons, of food is lost or wasted annually. With population expected to rise steadily to 9 billion by 2050, global food waste must be responsibly addressed.

Another concern linked to food wastage is rising food prices. There exists a plethora of factors contributing to rising food prices for numerous commodities including increased energy, animal feed and fertilizer costs. Furthermore, depletion of soil organic matter from agricultural land leaves few alternatives to farmers to the use of chemical fertilizers to avoid plant nutrient deficiencies. This reliance on chemical fertilizers is linked to increased costs of production, which is directly correlated to rising food prices (UNEP, 2005).

Many nations in the Caribbean are subject to the paradox of food. This concept essentially applies to places of agricultural potential, that for various reasons are unable to appropriately exploit this potential. This leads to an inability to appropriately respond to the dietary needs of the people.

Urban Sprawl, another issue faced by Small Island Developing

Nations, creates pressure on infrastructure for waste disposal. The most inexpensive waste disposal method is landfill. This method bears long-term costs, including leaching and groundwater contamination as well as methane generation (Isidori et al., 2003). A waste disposal method that is garnering global attention however is composting.



Mangrove Pond Landfill

<http://futurecentretrust.org/main/wp-content/uploads/2012/03/DSCN1354-smaller.jpg>

There are many benefits to composting. Research in the last decade suggests that composted material can suppress plant disease, which can lead to a decreased use of chemical pesticides (Graham, 1998; De Ceuster and Hoitink, 1999). Composting is directly linked to water conservation due to reduced irrigation requirements brought on by improved water retention and rainfall infiltration rates into the soils (Agassi, 1998; Demars, 2000). Composting can reduce chemical fertilization requirements, which in turn reduces soil erosion (Demars and Long, 1998).

The following statistics have been retrieved from a study conducted in Barbados in 2005 on solid waste characterization where data was

collected from April–October, 2005 at the Mangrove Pond Landfill (Mostafa et al., 2006). The three streams of waste that were primarily studied were rural residential, urban residential and institutional, commercial and industrial. The combined results of this study found that organics comprised 30% of the solid waste stream, paper & cardboard were 24%, and textiles were 7%. However, considering the fact that some textiles are made with cotton which is organic and that some news papers are compostable, therefore the actual percentage of compostable materials found in this solid waste study accounts for over 50%.



*Mulch production at the SBRC*

Following extensive research conducted through interviews of various government-affiliated organizations, local hotels and markets this summer, our project group hoped to learn how waste is managed in Barbados and possibly make suggestions to improve this system. Many of the hotels approached in regards to the project seemed to have an efficient system in place, where much of their food waste was given to a local farmer to use for his pigs. In a classic example of the barter system at work, the pig farmer repays the hotels with pork at the holiday season.

After a discussion with the Sanitation Service Authority (SSA) it was brought to our attention that waste disposal practices of hotels are generally good – they do a good job of bringing waste to the transfer station. However, insufficient households are involved in recycling. Currently, household waste is sent to a transfer station where it is then separated into various groups such as recyclables, organics and garbage. It is estimated that 60% of the household waste is composed of recyclables that were not removed in the household. Unfortunately, these discarded recyclables are degraded by mixing with garbage, to a point where they cannot all be salvaged for remanufacturing.

The transfer station is part of a larger organization known as the Sustainable Barbados Recycling Center (SBRC). It receives 1,000 tons of waste daily, of which 30% is household waste and the balance is construction and demolition waste. Much of the wood that comes in from construction or green waste (landscape or coconut husks) is made into mulch for resale. The facility has a small composting side project that deals with composting of organics. This activity could be expanded to include residual animal matter from farmers that is not acceptable to the island rendering plant and that is currently dumped directly into the landfills.

If composting practices are widely adopted throughout Barbados, farmers could incorporate new soil into their farm land and promote agricultural productivity. This will in turn promote increased self-sufficiency and decreased reliance on imported chemical fertilizers. This improved self-sufficiency will contribute to food sufficiency and economic development of the nation.

## Acknowledgements

We would like to extend our gratitude and appreciation to all those who provided us the platform to complete this project especially our project mentor, Dr. Danielle Donnelly who continually challenged, encouraged and supported us.

Furthermore, we would also like to acknowledge with much appreciation the crucial role of the staff of the Sanitation Service Authority (SSA), particularly Mrs. Leona Deane, who shared with us statistical data collected by previous project students. In addition, a thank you to Mr. Dale Cozier and Ms. Debbie Rhynd at the Sustainable Barbados Service Center (SBRC), who willingly shared their precious time while we visited. Lastly, we would like to extend our gratitude to Mr. Ricardo Marshall of the Solid Waste Management Unit for providing us with reports pertaining to waste management on the island.

We would like thank all those that contributed time, information and guidance to this paper. We hope that our report will serve as a useful tool for future waste management practices on the island and those involved in this important activity.

## References

- Agassi, M., Hadas, A., Benyamini, Y., Levy, G.J., Kautsky, L., Avrahamov, L., and H. Zhevelev, 1998. Mulching effects of composted msw on water percolation and compost degradation rate. *Compost Science and Utilization*. JG Press. Emmaus, PA. 6:2, 34-41
- Demars, K.R., and R.P. Long. 1998. Field Evaluation of Source Separated Compost and Coneg Model Procurement Specifications for Connecticut DOT Projects. University of Connecticut and Connecticut Department of Transportation. December, 1998. JHR 98-264.
- Demars, K.R., Long, R.P., and J.R. Ives. 2000. Use of Woodwaste Materials for Erosion Control. New England Transportation Consortium. April.
- FAO. (2011, May 11). Cutting food waste to feed the world. Retrieved June 27, 2014, from: <http://www.fao.org/news/story/en/item/74192/icode/>
- FAO. 2013. The state of Food insecurity in the world.
- Graham, J.H. 1998. Composted municipal wastes increase growth, yield and disease tolerance. P.189-192. In: K.C. Das and E.F. Graves (eds) *Composting in the Southeast: 1998 Conference Proceeding*. Sept.9-11; BAE Dept., College of Agricultural and Environmental Sciences, UGA, Athens, GA.
- Isidori M., Lavorgna M., Nardelly A., Parella A. 2003. Toxicity identification evaluation of leachates from municipal solid waste landfills: a multispecies approach. Dipartimento di Scienze della Vita, Seconda Università di Napoli, via A. Vivaldi, 43 I-81100, Caserta, Italy.
- Long, F. 1982. The Food Crisis in the Caribbean. *Third World Quarterly*. 4: 758-770.
- Mostafa A. W., L.H. Consulting Limited, Simmons and Associates Inc., EGARR Associates. 2006. Solid Waste Characterization Study. The Sewage and Solid waste Project Unit. Ministry Of Health. Barbados.
- UNEP. 2005. Solid waste management. Available at: <http://www.unep.org/ietc/Portals/136/SWM-VolI-PartI-Chapters1to3.pdf> .Accessed on 10-08-2014.