# COMPOSTING

## OVERVIEW OF A HIGH-IMPACT DRAWDOWN SOLUTION

When organic matter decomposes in landfills, it releases methane, a potent GHG. Composting allows for organic matter to be broken down by microbes. The process sequesters carbon and produces fertilizer.

## TECHNOLOGY AND MARKET READINESS

The technology is currently practiced and readily available in many counties in Georgia.

## LOCAL EXPERIENCE AND DATA AVAILABILITY

Data is available in major cities and metro areas.

## TECHNICALLY ACHIEVABLE CO2 POTENTIAL

Composting could reduce a number of landfills in Georgia and would potentially reduce methane emissions. According to the 2005 study by the Georgia Department of Community Affairs, about 3 million tons/y of organic fractions of municipal solid waste is available for composting. The organic fractions do not include food waste, but include mainly green wastes such as papers, wood and yard trimmings. Although some counties in Georgia operate composting facilities (e.g. Clarke county), a majority of green wastes are landfilled, which may be diverted to composting facilities. It was estimated by the EPA that about 0.16 t CO2-e is reduced for every short ton of mixed organic waste (EPA, 1998). If 50% of organic waste generated in Georgia is composted every year, composting could reduce about 2.4 Mt CO2-e by 2030.

## COST COMPETITIVENESS

Usually economical. Operating expenses are often high.

## BEYOND CARBON ATTRIBUTES

This solution can enrich soil health, reduce methane emissions and reduce the need for chemical fertilizers [4]. Microbial activity degrades raw food wastes resulting in end-products rich in microbial populations, creating extremely fertile soils (EPA, 1998). In addition, landfills will have reduced waste and land use demands will correspondingly decrease. Approximately 27 million tons of municipal solid waste was recovered in 2017 through composting, allowing for that waste to be diverted from landfills [6]. Composting can also provide increased food security and is affordable if composting at home [5]. If compost is used to return nutrients back into exhausted soils on farmlands, the food waste loop can narrow aiding in food security [7].

Negative beyond carbon impacts could result if operating costs for composting services become higher than those associated with landfills. An example from Colorado found backlash to mandatory composting when it added $4.45 to household's monthly expenses [8]. Additionally, there are costs associated with interventions and education required for households and businesses to change disposal practices.

References:

Beck, R. W. (2005). Georgia Statewide waste characterization study. Final Report. Georgia Department of Community Affairs.

EPA. (1998). An Analysis of Composting As an Environmental Remediation Technology. EPA530-R-98-008. https://www.epa.gov/sites/production/files/2015-09/documents/analpt_all.pdf

Platt, B and N. Goldstein. (2014). State of composting in the U.S. BioCycle, July 2014: 19-27. Available online at: https://ilsr.org/wp-content/uploads/2014/07/biocycle-stateofcomposting-us-article-july-2014.pdf

Endnotes:

1. https://www.drawdown.org/solutions/food/composting
2. Waste Reduction Model - https://www.epa.gov/warm
3. http://lessismore.org/materials/72-benefits-of-composting/
4. https://www.epa.gov/recycle/composting-home
5. https://ilsr.org/benefits-composting-compost/
6. https://www.epa.gov/sustainable-management-food/reducing-impact-wasted-food-feeding-soil-and-composting
7. https://extension.uga.edu/publications/detail.html?number=B1189&title=Food%20Waste%20Composting:%20Institutional%20and%20Industrial%20Application
8. https://smartasset.com/mortgage/the-economics-of-composting

**Corresponding Author:**

**Dr. Sudhagar Mani**
**Professor, School of Chemicals, Materials, and Biomedical Engineering**

**University of Georgia**
**Phone: 706-542-2358**
**Email: smani@engr.uga.edu**
**0155F Riverbend Research Center North**
**110 Riverbend Road, Athens, GA, 30602**