NEW ITEMS IN THE NBMA RESOURCE LIBRARY

The September Issue September 2016

TITLE: Total and per capita value of food loss in the United States

Author: Buzby, J.C. and J. Hyman

Source: Food Policy 2012 37:561-570

Abstract: There are few peer-reviewed or major published studies that estimate the total amount of food loss in developed countries and even fewer attempt to estimate the monetary value. We compiled estimates of the amount and value of food loss for more than 200 individual foods in the United States using the US Department of Agriculture's Economic Research Service's Loss-Adjusted Food Availability data and then aggregated these values to estimate the total value of food loss and the value by food group. The results indicate that in 2008, the estimated total value of food loss at the retail and consumer levels in the United States as purchased at retail prices was $165.6 billion. The top three food groups in terms of the value of food loss at these levels are: meat, poultry, and fish (41%); vegetables (17%); and dairy products (14%). Looking more closely at the estimates for the consumer level, this level of loss translates into almost 124 kg (273 lb) of food lost from human consumption, per capita, in 2008 at an estimated retail price of $390/capita/year. Food loss represents a significant share of household food expenditures: our estimates suggest that the annual value of food loss is almost 10% of the average amount spent on food per consumer in 2008 and over 1% of the average disposable income. This consumer level loss translates into over .3 kg (0.7 lb) of food per capita per day valued at $1.07/day. Our estimates of the total value of food loss in the United States and loss estimates by food group are useful in that they can generate awareness of the issue among the food industry members, governments, and consumers. Potential large-scale approaches and economic incentives to mitigate food loss in developed countries are also discussed.

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TITLE: Systematic evaluation of industrial, commercial, and institutional food waste management strategies in the United States

Author: Hodge, K.L., J.W. Levis, J.F. DeCarolis, and M.A. Barlaz

Source: Environ. Sci. Tech. 2016 50:8444-8452

Abstract: New regulations and targets limiting the disposal of food waste have been recently enacted in numerous jurisdictions. This analysis evaluated selected environmental implications of food waste management policies using life-cycle assessment. Scenarios were developed to evaluate management alternatives applicable to the waste discarded at facilities where food waste is a large component of the waste (e.g., restaurants, grocery stores, and food processors). Options considered include anaerobic digestion (AD), aerobic composting, waste-to-energy combustion (WTE), and landfilling, and multiple performance levels were considered for each option. The global warming impact ranged from approximately −350 to −45 kg CO_2e Mg^{-1} of waste for scenarios using AD, −190 to 62 kg CO_2e Mg^{-1} for those using composting, −350 to −28 kg CO_2e Mg^{-1} when all waste was managed by WTE, and −260 to 260 kg CO_2e Mg^{-1} when all waste was landfilled. Landfill diversion was found to reduce emissions, and diverting food waste from WTE generally increased emissions. The analysis further found that when a 20 year GWP was used instead of a 100 year GWP, every scenario including WTE was preferable to every scenario including landfill. Jurisdictions seeking to enact food waste disposal regulations should consider regional factors and material properties before duplicating existing statutes.

Document#: BIN.TP.AD.5.7

TITLE: Evaluation of climate, energy, and soils impacts of selected food discards management systems

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Author: Morris, J., S. Brown, H.S. Matthews, and M. Cotton
Source: OR Dept Environ. Qual. 2014 http://www.oregon.gov/deq/LQ/Documents/SWdocs/FoodReport.pdf
Abstract: The Oregon Department of Environmental Quality (DEQ) commissioned a study to provide a systematic current literature review and harmonization of life cycle assessment (LCA) studies that cover one or more of four targeted food waste treatments:
5. Aerobic composting (AC),
6. Anaerobic digestion (AD),
7. In-sink grinding via a food waste disposer (ISG), flushing to sewer, and management with other sewerage at a wastewater treatment plant, and/or
8. Landfill (LF).
Impact factors the consulting team recorded and assessed in the literature review are energy, greenhouse gases (GHGs), and agricultural practices/soil productivity – for example, increased soil carbon and water holding capacity and decreased soil erosion. In addition to inventorying energy use and GHG emissions from these treatments noted in the reviewed literature, the consulting team assessed energy displacements (e.g., electricity from AD, ISG or LF methane combustion replacing grid electricity), synthetic soil supplement displacements in agricultural practices (e.g., AC compost or AD digestate as a nutrient source for plants replacing synthetic fertilizer and thereby reducing fertilizer manufacturing energy and GHG emissions), and soil productivity improvements (e.g., higher soil carbon as a result of both compost/digestate amendments and increased plant productivity, with the latter in turn due to those amendments).
DEQ requested review of research regarding soil productivity related to the use of organic soil inputs from the treatment methods (compost, digestate and sludge) because soil productivity directly affects food production and climate and energy impacts. In general the LCA literature does not directly address soil productivity as an impact category. The LCAs we reviewed also did not discuss soil productivity impacts such as water holding capacity or decreased soil erosion. For these reasons Dr. Brown chronicled the scientific literature on increased plant and soil productivity resulting from organic amendments. Her findings are discussed in Section 3 (Soils, Organic Amendments & Amendment Impacts on Soil Productivity).
Document#: BIN.TP.AD.5.8

TITLE: Analyzing food waste management methods

Author: Parry, D.L.
Source: Biocycle. 2013 54:6: 36
Abstract: How food waste is managed in a community has an impact on water demand and wastewater treatment, energy demand and recovery, transportation, carbon footprint and the people that generate and handle the food waste. The Water Environment Research Foundation (WERF) hired CDM Smith to evaluate and compare the economic and environmental impacts of food waste management methods. For more information on this study, see the published document: Sustainable Food Waste Evaluation (WERF OWSO5R07e). This peer reviewed WERF evaluation was funded by InSinkErator.
The research quantified economic and environmental impacts of five different food waste management methods:
• Landfilling: Curbside collection of commingled food waste with other residential municipal solid waste (MSW) and disposal in a landfill.
• Composting: Curbside collection of source separated food waste with green waste and beneficial use in a large-scale composting facility.
• Food Waste Disposer: Disposal of food waste in a residential food waste disposer, with transportation via the existing sewer infrastructure to the water reclamation facility (WRF) operating with anaerobic digestion.
• Direct Anaerobic Digestion: Curbside collection of source separated food waste, transportation to the WRF and beneficial use in the treatment plant anaerobic digesters.
• Mixed Materials Recovery Facility (MRF): Curbside collection of food waste and MSW. Separation of food waste in a MRF and transportation of the separated food waste to an anaerobic digester at a WRF.
Document#: BIN.TP.AD.5.9

TITLE: Biogas production and potential from U.S. wastewater treatment

Author: Lono-Batura, M., Y. Qi, and N. Beecher
Source: Biocycle. 2012 53:12:46
Abstract: How many wastewater treatment plants (WWTPs) have anaerobic digestion? How many are utilizing the biogas? What percentage of these facilities are feeding additional substrates into their digesters? How is the biogas being used — is it flared, used to drive process machinery, heat the digester, or injected into a natural gas pipeline? These are some of the questions asked of the approximately 1,200 wastewater treatment plants (WWTPs) currently operating anaerobic digesters across the United States during a survey conducted in the fall of 2011 and winter and spring of 2012. With seed funding from the Water Environment Federation (WEF), the North East Biosolids & Residuals Association (NEBRA) and Black & Veatch led a team of approximately 20 industry representatives to gather data, state-by-state, for what has become a free online database of biogas production at WWTPs.
Document#: BIN.TP.AD.5.10