

## ***Food Loss and Waste—A paper in the series on The Need for Agricultural Innovation to Sustainably Feed the World by 2050***

Despite [tremendous progress](#), food insecurity, hunger, and malnutrition are still widespread.

- Natural resources fundamental to agricultural production are limited.
- Agriculture has become a dominant force for the decline in water quality worldwide.

No single [comprehensive estimate](#) of food loss and waste (FLW) exists in the United States.

- The first major U.S. data source is the U.S. Department of Agriculture's Economic Research Service's Loss-Adjusted Food Availability data series.
- The second major source of data is from the U.S. Environmental Protection Agency, which provides estimates of the amounts of food waste entering municipal solid waste facilities.
- The third source of data originates from a report by the Natural Resource Defense Council.
- The fourth estimate is from ReFED, a multistakeholder nonprofit organization with the goal of providing a roadmap to decrease U.S. food waste by 20%.



Why [food loss and waste](#) (FLW) occurs.

- Estimated on-farm FLW totals 9.1 million tonnes, the vast majority of which ends up being returned to the soil.
- The food industry, including manufacturers and consumer-facing businesses, generates 23.6 million tonnes of food waste.
- Consumer level FLW is the single largest component of all FLW in the U.S. food chain.

The road to a 50% [reduction](#) is long and time is short.

- A great deal of effort has gone into promoting food waste composting.
- For the nation to work toward the 50% reduction goal, it is important to quantitatively assess the effectiveness of the current programs and measures.

A potential [game changer](#) in the realm of food waste reduction, recovery, and recycling is to convert food waste generated at the consumption state into animal feed.

- The technological innovation needed for a game changer is one that can effectively dehydrate, sanitize, and homogenize food waste materials.
- Other practical issues to address include what animal species would be most suitable or would benefit the most from feeding (treated) consumer food waste.
- Such technological innovation, coupled with research addressing the production and economic essentials, could have the potential for a transformative change of the current food waste management paradigm.

Changing [consumer behavior](#) from wasteful to sensible use of food is the best option for the most desirable outcome.

- Humans have always wasted food, but the scale of the problem today is unprecedented in history.
- The decisions and actions consumers make and take are not necessarily rational nor straightforward but subject to the influence of many internal and external factors.
- The ability to meet the challenges of food waste reduction, resource conservation, and environmental sustainability hinges to a large extent on individual consumers' willingness to alter their habits and behavior and cut down their footprint.
- Substantially decreasing food waste is attainable.

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