Waste Not: Closing the Loop on Organics Wastes <u>Wastenot.umn.edu</u>

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The Problem with Food Waste

- At the retail and consumer levels, food waste amounts to *1,250 calories per person daily*, 60% of what we actually eat.
- The value of wasted food in the U.S. is \$160 billion per year – about \$500 per person.

Environmental impacts of U.S. food waste









31% of cropland

25% of water consumption

21% of landfill volume

2% of energy consumption



Anaerobic digestion





Landfill



Energy recovery





Animal feed



Biofuels



Compost

What is the highest and best use of food waste?



Lunds/Byerleys Grocery store



University of Minnesota dining hall waste



Household sourceseparated organics



Mixed organics waste, transfer station

Some of our favorite organic wastes!

Dr. Jerry Shurson

416





Caloric content of two conventional feedstocks and four source of urban organic wastes.

SSO = source separated organics, from Minneapolis, 83% food waste.

On a caloric basis, urban organic wastes compare well with corn and soybean meal!



We can now map the distribution of food waste calories from grocery stores and restaurants in relation to rendering and food processing plants.

Is the ash from incinerated biosolids a good source of P for crops?

Application rate for all pots = 100 lb P_2O_5/A

Ash

Fertilizer

Dried

Biosolids

Struvite



Economically optimized distribution of biosolids (ash or dry) on farmland based on P.

Household Survey of Minneapolis' SSO Program



SUMMARY

- There are multiple potential benefits to reengineering our organic waste system
 - Decrease cost of disposal
 - Generate value from products
 - Reduce environmental impacts of food production
- Creating knowledge about waste utilization potential (highest and best use) will create value.
- Modifying waste infrastructure may facilitate broader utilization of organic wastes.
- Re-engineering must involve the social and political system.

Values of Waste Not Research to Minnesotans

To farmers:

Urban food waste ightarrow animal feed

Urban biosolids \rightarrow crop fertilizer

Possibly lower (or at least more stable) prices

For cities:

Avoided landfill costs Added value for "highest and best uses" for food wastes

For all:

Lower environmental impacts from our food system.