

Food Waste Recovery at Reinford Farms

Bowie State University

Brett Reinford

October 24th, 2018



Current Farm Overview

- Located outside Mifflintown, PA
- Owned by my dad and mom
 - Myself and 2 brothers manage
- 18 full-time employees
- Crop 1300 acre
- 720 Cows



What's my story?

- Born and raised on a farm
- After high school decided I didn't want to farm
- In college I developed an interest in renewable energy
- Move backed to the farm in 2012

What is a digester?

- A container that promotes decomposition
 - Microorganisms break down organic material and convert it into methane gas
 - What goes into a digester must come out
 - Many different digester designs but in theory they all do the same thing

Digester Basics

- Our digester is 450,000 gallons.
 - Feed stock is about 12,000 gallons of manure and 6000 gallons of food waste
- 140k Wh motor
 - Enough electricity to power 112 homes
- Fed with Manure and Food Waste 6x per day





Digester Inputs

- Manure from 720 total cows
- Food waste (receiving a tipping fee)

Digester Outputs

- Electric
- Manure Solids
- Waste Heat





New
Digester
Motor

=

More
Heat!!

Digester
Motor

HOT AIR

HOT AIR

Heat
Exchanger

HOT AIR

HOT AIR

HOT AIR

HOT AIR

Food Waste Recovery

- Food Waste Accounts for 21% of landfill waste (ReFed.com)
- 40% of all food in the United States is wasted (stopwaste.org)
 - 15% on the farm, 2% at manufacturing, 40% at the store, and 43% in your home (ReFed.com)
- Food Waste Co-digestion is slowly becoming more common in some states having landfill bans.
- Food Waste Produces more methane than manure

- We didn't build a digester to recycle food waste
 - Started processing food waste in 2008

Food Waste Recovery

- We began take loads of source separated food waste
- About 30 tons a day
- Send through a grinder and mixed with cow manure
- We processed food waste this way for 9 years



Food Waste Recovery

- The problem with food waste is it can be contaminated
 - Trash build up in our digester
- Looked for a solution and purchased a depackager and built a food waste recycling facility





Food Waste Recovery

- Work with a variety of clients
 - PA, NY, NJ
 - Grocery, Distribution Centers, Manufactures
- Waste is unpredictable
- Most waste receive is unelidable



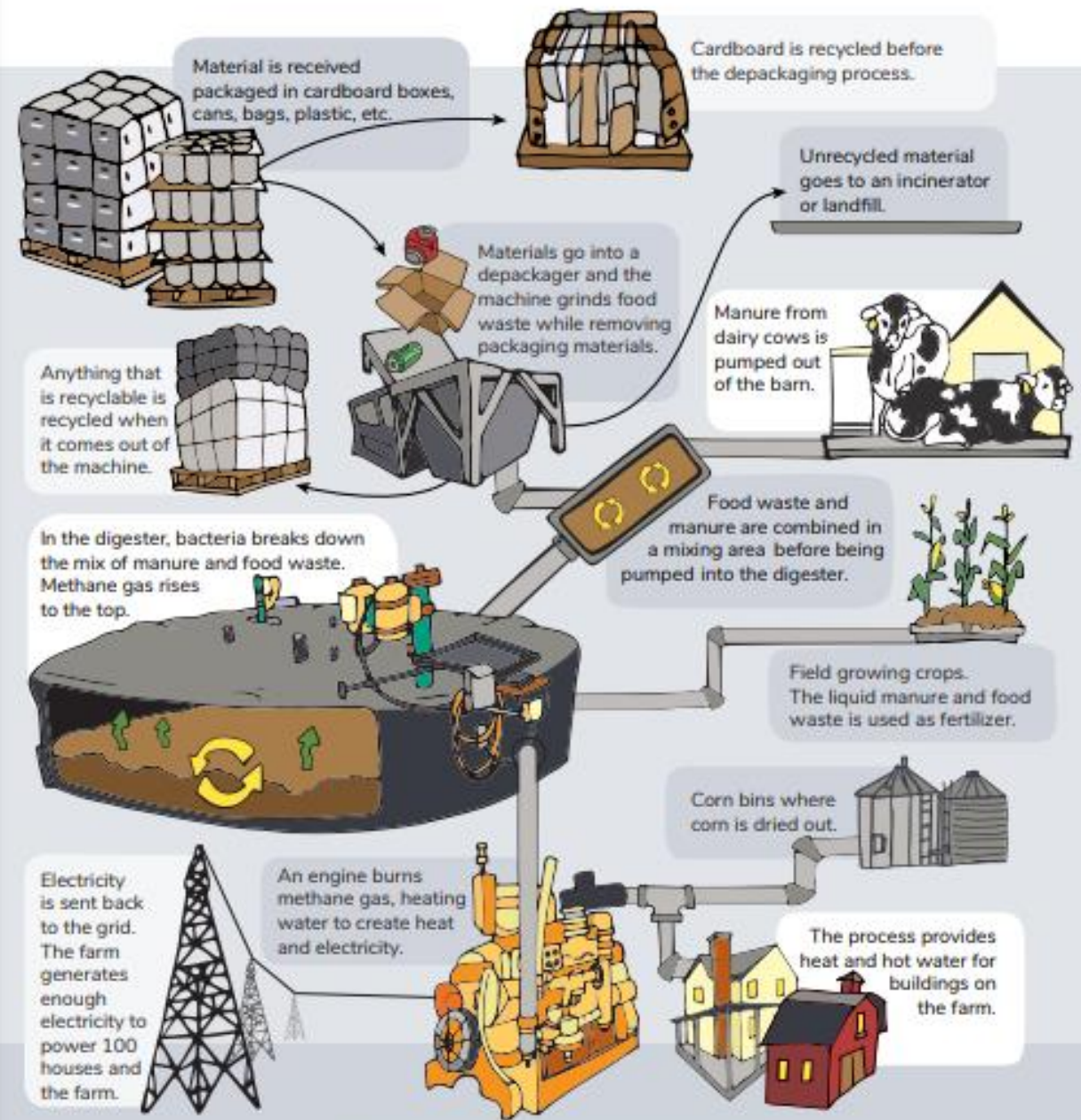


Food Waste Recovery

- 3 employees run this business
- Part of recycling food waste is recycling the packaging
 - We recycle steel and cardboard

The Process

How We Make Power



Environment Benefits of Recovery Food Waste

- 9750.00 Metric tons/month of avoided CO₂E emissions on 5000 tons of food waste recovered at Reinford Farms this year
 - Equivalent to 23,897,059 miles driven by cars
 - OR
 - Equivalent to 1461 homes/ electricity us for 1 year
 - OR
 - Carbon sequestered by 11,484 acres if forest

Source: EPA.gov

Future Plans

- A 2nd 499kw digester built along side of our existing digester
- Grow the food waste business
 - Send food waste to other farms

Closing Comments

We recycle food waste because:

- It's fun
- Great for the environment
- Gives our farm a different story to tell
- Generates additional income for the farm

LET'S NOT WASTE FOOD!

Questions