Food Waste and Sustainability: INITIATIVES TO USE FOOD WASTE PRODUCTIVELY

SEPTEMBER 2018
Commonsense Science

IFSH is a one-of-a-kind applied food research institute that provides stakeholders the opportunity to develop and exchange knowledge, experience, and expertise to address key issues in food safety, food defense, and nutrition. Powered by a singular combination of in-depth expertise and research capabilities, IFSH’s collaborative research model helps stakeholders define and design practical approaches to solving real-world challenges in food industry operations.
From the waste industry side

Key Takeaways from WasteExpo 2018
A picture is worth a thousand words...

WasteExpo 2018 is now in the books—and it was epic! Our 50th anniversary was the largest industry reunion yet, with 14,000+ participants and 600+ exhibitors. And, as noted by Waste360 contributor Leone Young, Principal of LTY ERC, LLC, “Once again, the education sessions provided a wealth of information on key industry issues.”

Whether you were able to attend or not, we have some special takeaways to share with you—from even more sessions than last year.

Once again, the saying “a picture is worth a thousand words”—holds true. These visual notes from some of the most popular sessions at WasteExpo were a big hit.

ENJOY them!
From the waste industry side
From the waste industry side

**Keynote Session:** Solutions to Food Loss, Waste, and Recovery; Organics Diversion
Legislation and Infrastructure Development

Gain insights on turning trash into treasure to drastically reduce the amount of food that is wasted annually.
From the waste industry side

Organic Waste of Today

Recycling of the 70’s / 80’s
From the waste industry side

1/4 OF FOCUS COVERING YOUR INDUSTRY’S WASTE

Organic Waste

Waste Expo

an event by Waste360™
1) Introduction to Options

2) Approach of Evaluation
Traditional Options – Food Waste

Food Recovery Hierarchy

- **Source Reduction & Reuse**: Reduce the volume of surplus food generated
- **Feed Hungry People**: Donate extra foods to food banks, soup kitchens and shelters
- **Feed Animals**: Divert food scraps to animal feed
- **Industrial uses**: Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy
- **Composting**: Create a nutrient rich soil amendment
- **Landfill / Incineration**: Last resort to disposal
Traditional Options – Food Waste
Traditional Options
Food Waste

Landfill & Incineration
Landfill & Incineration
Composting
Traditional Options
Food Waste

Dehydrating
Traditional Options
Food Waste

- Source Reduction
- Feed Hungry People
- Feed Animals
- Industrial Uses
- Composting
- Incineration or Landfill

Digesters
Traditional Options

Food Waste

Industrial Uses – Supply Line Material

- Source Reduction
- Feed Hungry People
- Feed Animals
- Industrial Uses
- Composting
- Incineration or Landfill

[Images of industrial uses and waste collection]
Industrial Uses – Fertilizer (Direct)
Industrial Uses – Customized Cases
i.e. Cherry Pits – Road base in cherry fields
Traditional Options
Food Waste

Industrial Uses – Customized Cases
i.e. wastewater sludge – pellet binder
Traditional Options
Food Waste

Animal Feed
Direct to CAFO
Traditional Options
Food Waste

- Source Reduction
- Feed Hungry People
- Feed Animals
- Industrial Uses
- Composting
- Incineration or Landfill

Animal Feed
Processed Feed Programs
Traditional Options
Food Waste

Animal Feed
Pet Food
Human Consumption
Food Donations
Source Reduction
Utilize as alternative food ingredient
Traditional Options
Food Waste

Source Reduction

Based on Shift [2nd shift] and Production Line [BREAD]

Area
From: (September 21, 2018 – September 23, 2018)

- Floor Sweep
- Make Up
- Oven DePan
- Wrapping

<table>
<thead>
<tr>
<th>Area</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>241</td>
<td>868</td>
</tr>
<tr>
<td>1.6k</td>
<td>10.4k</td>
</tr>
</tbody>
</table>

Tote Weight

Food Research Institute
UNIVERSITY OF WISCONSIN–MADISON
You have options, but how to approach?
1) Management buy-in with genuine support
1) Management buy-in with genuine support
2) Establish measurement methods of Sustainability and Financial Impacts
2) Establish measurement methods of Sustainability and Financial Impacts

“If you can’t measure it... you can’t manage it”

- Dr. Deming
Approach of Evaluation

3) Define Financial Philosophy
Approach of Evaluation

3) Define Financial Philosophy
3) Define Financial Philosophy

Approach of Evaluation
3) Define Financial Philosophy

Approach of Evaluation

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Costs</td>
<td>Vendor Costs</td>
</tr>
<tr>
<td>Vendor Costs</td>
<td>Management Costs</td>
</tr>
</tbody>
</table>
3) Define Financial Philosophy

![Diagram showing comparison between Benchmark and Actual Vendor Costs and Management Costs]
Approach of Evaluation

4) Development Phase
4) Development Phase

End Use Value

- Equipment
- Logistics
- Man-hours

Approach of Evaluation
4) Development Phase

Approach of Evaluation

- End Use Value
- Equipment
- Logistics
- Man-hour Change
Approach of Evaluation

4) Development Phase

- Mixed Return to Bakery
- Bread Crumb Recovery
- Warehouse/Thrift Stores
- Bakery Hub
- DC Consolidation Points
- Destination Points

End Use Value

Logistics

Man-hours
4) Development Phase

Approach of Evaluation

Prior Man-hours

=>

Man-hours going forward
### 4) Development Phase

<table>
<thead>
<tr>
<th></th>
<th>End Use Value</th>
<th>Equipment</th>
<th>Logistics</th>
<th>Man-hours</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ XXXX</td>
<td>($ XXX)</td>
<td>($ XX)</td>
<td>$ N/A</td>
<td>$ YYYY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4) Development Phase

<table>
<thead>
<tr>
<th>Component</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Use Value</td>
<td>$ XXX</td>
</tr>
<tr>
<td>Equipment</td>
<td>($ XXX)</td>
</tr>
<tr>
<td>Logistics</td>
<td>($ XX)</td>
</tr>
<tr>
<td>Man-hours</td>
<td>$ N/A</td>
</tr>
<tr>
<td></td>
<td>($ YYY)</td>
</tr>
</tbody>
</table>
4) Development Phase

End Use Value $ XXXX

Equipment ($ XXX)

Logistics ($ XX)

Man-hours $ N/A

$ YYYYY

Approach of Evaluation
5) Maintenance Phase
Approach of Evaluation

5) Maintenance Phase

- Procurement
- Production
- Environmental, Health, Safety
- Legal
- Accounting
- Marketing/Sales
5) Maintenance Phase

Approach of Evaluation
QUESTIONS?

If its not efficient... it’s just waste.