P2 Efforts in the NYS Food & Beverage Sector

Trish Donohue & Missy Hall
August 7, 2019
Agenda

- Overview of NYSP2I
- Our Work - Case Studies of F&B Assistance
- P2 Tools - Tech Transfer for F&B
- Future Efforts
NYS Pollution Prevention Institute

- Established in 2008
- Headquartered at Rochester Institute of Technology (RIT) in Rochester, NY
- $3.9M in annual NYS funding administered through the NYS Department of Environmental Conservation
- Focus on reduction of resource consumption (water, raw materials, energy) and elimination of waste and toxics
  - Sustainable Manufacturing Assessments
  - Supply Chain Sustainability
  - Technology Commercialization
  - Food Waste Diversion
  - Emerging Contaminants
  - Outreach & Education
  - Research & Development
Rochester Institute of Technology

- Founded in 1829
- Privately endowed, co-ed university
- 9 colleges emphasizing career education and experiential learning
- 18,600 undergraduate and graduate students
- International locations in Eastern Europe, Dubai, and China

Golisano Institute for Sustainability

- Academic Programs
  - Master’s of Sustainable Systems
  - Ph.D. in Sustainability
  - Master’s of Architecture
- Technical problem-solving & applied research & development for manufacturers
- Professional staff that work exclusively on industrial engagements
Resource Network

- University Partners
- Incubators
- Manufacturing Extension Partnership Centers
Assistance for NYS Companies, Municipalities & Non-Profits

- Must be NYS-based entity
- Typical project cost range is $15-$50k
- NYSP2I funding offsets (off-set 50 – 90%) most of the project cost to the organization
  - Expenses are non-capital expenses
  - RIT’s engineering, technical and project management services
- Typical project takes about 2-6 months
- Post-project metrics reporting
NYSP2I Beverage Clients
NYSP2I Food Clients

- Baldwin Richardson Foods Co.
- Perry's Ice Cream
- Kreher
- Catskills Family Creameries
- Argyle Cheese Farmer
- Zweigle's
- Heluva Good!
- ovenly
- LiDestri
- Van Leeuwen
- Dudley
- O-A-T-KA
- Full Circle Feed
Case Study: Finding Reduction Opportunities for Water & Energy

Criteria: Company wants to identify opportunities that can lead to productivity and efficiency gains along with technical and economic feasibility analyses of improvement / environmental options.

Typical projects involve one or more of the following:
• Waste reduction and recycling
• Water conservation and reuse
• Energy conservation and reduction
• Alternative chemical and material use
• Deployment and tech transfer of P2 technology

Background
Identify cost-effective water management and energy savings opportunities in the production process to more closely align with leaders in the industry

Work Performed
• Quantified water use in the different production areas
• Researched potential water and wastewater reduction methods and technologies
• Performed process assessment to identify potential energy savings opportunities
• Performed economic analyses for the potential P2 strategies

Results
• Savings of >$56k/yr and >30% reduction water/product ratio
• Low-flow spray nozzles reduce water use by 36-45%
• Lower flow CIP spray balls reduce water by up to 96%
• Switch manual wash to automatic clean-out-of-place machine
• Routine cleaning of the RO unit membranes for higher efficiency over longer period of time
• Request interval data from their electric utility provider to make informed improvement decisions
Case Study – Identifying Gaps in Sustainable Practices

Criteria: Company wants to identify opportunities to be more competitively positioned as an environmentally-conscious business and supplier.

Typical projects involve one or more of the following:
• Supply chain assessments and plans
• Customer scorecard/questionnaire response guidance and assistance
• Readiness preparation for Ecolabels
• Sustainable sourcing & procurement
• Zero waste assessments and solutions for source reduction

Background
Businesses that strategize, set targets, measure and report their sustainability efforts will likely generate more revenue, retain and create jobs, and reduce the risk of jeopardizing potential business.

Work Performed
NYSP2I created an assessment tool to inquire about various common components of internationally accepted sustainability guidelines, standards, and protocols.

Results
• Anticipate ~10% increase in sales and ~10% increase in job growth
• Measure impacts to set objectives & targets and track performance
• Add policy and action plans to marketing and communications material
• Inform on sustainable purchasing alternatives
Criteria: Company wants to identify opportunities to be more competitively positioned as an environmentally-conscious business and supplier.

Typical projects involve one or more of the following:

- Supply chain assessments and plans
- Customer scorecard/questionnaire response guidance and assistance
- Readiness preparation for Ecolabels
- Sustainable sourcing & procurement
- Zero waste assessments and solutions for source reduction
Case Study – Comparing GHG Impact of Whey Bioprocess Tech. vs Palm Oil Production

Criteria: Company has developed working prototype for new product or process that offers an advantage of terms of its impacts to the environment.

Typical projects involve one or more of the following:
- Independent, third-party product testing & evaluation
- Life Cycle Assessment (LCA)
- Competitive product benchmarking
- Environment/energy impact evaluation
- Market viability assessment

Background

Capro-X requested an energy and GHG impact comparison for their fermentation bioprocess technology which processes acid whey into a bio-oil to potentially be used as a palm-oil substitute.

Work Performed

Defined baseline for comparison, conducted literature review, and collected data. Compared calculated energy use and GHG impacts for off-site anaerobic digestion of whey, palm oil production, and Capro-X bioprocess to quantify reductions.

Results

The analysis showed the Capro-X bioprocess has the potential to provide a 93% decrease in energy use and a 92% decrease in GHG impact per gallon of whey as compared to the baseline process.
Case Study – Upcycling Wasted Food

Criteria: Business/organization is food-related and is seeking to improve food waste management practices

Typical projects involve one or more of the following:

- Quantify food waste
- Identify opportunities for waste prevention and diversion
- Assist in overcoming challenges associated with food waste management
- Training & education

Background

A retailer and a food and drink manufacturer wanted to evaluate the viability of collecting excess products and co-streams and turning them into new end-products

Work Performed

Collaborated with a sustainable agribusiness consultant to quantify the available product, evaluate procedures for handling and storage, and analyze shipping logistics, as well as assess various drying technologies and market opportunity

Results

It is logistically feasible for both companies to create new end products via dehydration. The market assessment helped both companies understand the end-product potential.
Case Study – Alternative Uses for Spent Grain Flour

Criteria: Business/organization is food-related and is seeking to improve food waste management practices

Typical projects involve one or more of the following:

• Quantify food waste
• Identify opportunities for waste prevention and diversion
• Assist in overcoming challenges associated with food waste management
• Training & education

Background
RISE wanted to understand the alternative use opportunities for their flour products as they expand their business

Work Performed
Analyzed RISE flours for 40 different parameters at third party labs. Researched current uses of spent grain and trends in consumer demands

Results
The functional flour, pet food, and plant-based protein markets are the most prominent opportunities identified for RISE flours. The flours are also well suited for partial wheat flour replacement in the functional flour market
P2 Tools/Resources – Organic Resource Locator

Available at nysp2i.rit.edu/resources
P2 Tools/Resources – Food Waste e-book

Available at nysp2i.rit.edu/resources
Sustainable Winery Practices Guidebook

Winery Self-Assessment
Five (5) areas are identified for self-assessment in winery operations:

- A. Sustainability Planning
- B. Water Use and Wastewater Generation
- C. Energy Use
- D. Material Use
- E. Waste Management

These areas are analyzed using a four-part framework:

1. **Scorecard Questions** to evaluate current winery sustainability practices
2. **Explanation** of the subject matter
3. **Improvement Opportunities**, if applicable
4. **Case Study**, when available

Call to Action
- Looking for wineries willing to test drive the workbook and provide feedback
- Please Call Chris Gerling from Cornell if interested in participation
  Phone: (315) 787-2277
  Email: cjj9@cornell.edu
Future Efforts – NYSP2I Sustainable Brewery Initiative

EPA SRA Grant 2019 - 2021

- Offer practical P2 tools to craft breweries
- Measure to reduce water, chemical use, and energy use
- Conduct 10 on-site assessments and assist with one implementation of a P2 solution
- Create a guidance document as a tool for other breweries to “self-implement” P2 strategies
- Host a summit to disseminate best practices and provide a forum to exchange ideas and network with environmental experts.
- Collaboration with:

  - Kick-off webinar with key brewery stakeholders
  - Work with the project partners to leverage their networks and communication platforms to promote the initiative

  - Develop screening survey
  - Contact breweries to collect baseline metrics
  - Select a min. of 10 breweries

  - Develop the assessment tool / checklist.
  - Conduct on-site assessments for the 10 breweries
  - Prepare assessment summary report

  - Complete implementation technical assistance project
  - Final written summary report for brewery

  - Sustainable Brewery Summit
  - Summary of 10 opportunity assessments
  - Implementation case study and guidance document

  - Technology Transfer

  - Host a summit to disseminate best practices and provide a forum to exchange ideas and network with environmental experts.

Cornell CALS NEW YORK STATE BREWERS ASSOCIATION FUZEHUB
Future Efforts - New York State Brewery Supply Chain

Identify sustainable practices in an upstream supply chain for brewers → Influence change and implement best practices through a Supply Chain Code of Conduct

1. Conduct research to identify sustainable and unsustainable supplier practices
   • Focus on raw materials (harvesting, processing practices)
   • Packaging (raw materials and products, packaging materials)
   • Purchasing practices (Supplier Code of Conduct, local suppliers, ecologo certified suppliers)
2. Develop and deliver outreach & education content for brewers
3. Develop a Code of Conduct (COC) and Supplier questionnaire to help brewers implement upstream supply chain transparency / traceability
   • Pilot the COC with two brewers with at least one supplier each
   • Share COC with NYS brewers
Future Efforts - Food Waste Working Group

Demonstrations
Workshops
& Tours
Additional Funding Sources - Food Waste Reduction & Diversion Reimbursement Program

- Empire State Development selected RIT in 2018 to administer a grant program aimed at reducing food waste in landfills
- $4M available over a 2-year period or until funding runs out
- Reimbursement up to 44% of eligible equipment expenses
- Eligible projects must divert food waste from landfills or incinerators
Thank You

Rochester Institute of Technology
111 Lomb Memorial Drive, Bldg. 78-2000
Rochester, NY 14623

Phone: (585) 475-2512
Email: nysp2i@rit.edu
Web: www.rit.edu/affiliate/nysp2i

Funding provided by the Environmental Protection Fund as administered by the NYS Department of Environmental Conservation. ©2019 Rochester Institute of Technology. Any opinions, findings, conclusions, or recommendations expressed are those of Rochester Institute of Technology and its NYS Pollution Prevention Institute and do not necessarily reflect the views of New York State.