

“Waste to Resource Research – What’s happening? What do you need?”

Notes from a discussion forum held at 2016 VORS Conference led by Deb Neher, Ph.D., University of Vermont. 22 participants in the discussion group including waste management facility managers, haulers, educators, private sector, students.

Thank you for participating in the M3 workshop at VORS! As promised, I am sending a compilation of the responses to the two questions that I posed to the group.

Deb

1. What is your greatest fear or concern around regarding the 2020 goal of diverting 100% food scraps from landfills?

Increase in contamination

- Concerned that recipes are not ready for the influx of food scraps and packaging
- GMO issues
- How will genetically modified composted food affect new growth?
- Herbicide issues
- Antibiotics and GMO contamination
- Invasive plant spread, GMO’s sneaking into organic/all natural farm practices
- All organic material is to be diverted, not just food scraps; my concern as a food waste processing facility and invasive plant coordinator for a non-profit, I am concerned that invasive plant material and seeds will spread at the facilities or along the route from a yard to drop off point.
- With the implementation of unit-based pricing, we see individuals wanting to divert as much as possible. Because of this, people want to divert things like cat litter, commercial floral arrangements, ‘dirty’ paper, etc. how do we temper that ‘enthusiasm’ to divert as much as possible?
- Feedstock consistencies: BPI products in particular (cups, plates, napkins, etc.); has direct relationship to organic versus not in a finished compost
- Contamination from plastics and other non-biodegradable inputs
- Contamination: keeping material clean enough to make recovery & processing viable
- The presence of pesticides in the food waste

-

Competition or scarcity of carbon

- Sourcing enough Carbon
- Lack of carbon sources
- Competition of carbon sources, given high energy content
- Regional competition for carbon raises compost production costs (woodchips, etc. as bulking agent and carbon amendment)

Compliance

- Seems that promoting an incentive on site would have most impact
- My greatest fear or concern is that not everyone is going to get involved or want to do the composting or have the space. What kinds of foods will people know to compost?
- Compliance and enforcement
- Lack of enforcement
- Who is going to enforce the ban at the collection facilities and how will they be sure there is 0% going to the landfill?
- Getting people to buy into composting in general. Most people are pretty lazy when it comes to sorting food scraps, from recycling, from trash.
- Getting general public and small restaurants to compost right
- At the last minute—every town is going to have to deal with organics and won't know what to do.
- On a town scale, how does one handle bone and meat scraps?
- Success of backyard programs
- Proper home composting techniques: keeping dogs and other animals away from harmful pathogens
-

Environmental footprint

- Concerned that the collection infrastructure for collection is not developing fast enough and curious about the environmental footprint of home collection.
- High moisture content (large volume of bulking agents needed)
- Will it be smelly? How to do it in a school situation?
- Look of facilities

Political corruption

- Industry and commercial enterprises lobbying for delays in implementation and/or specially crafted exceptions that will corrupt the process similar to the way organic food certification standards have been compromised

Marketing and certification

- Certifications on finished products
- Quality of compost they produce
- End markets/uses for the finished material
- State regulations are needed on compost quality
- What is the acceptable tolerance for separating organics from non-organics?
- How to train towns/municipalities in correct composting techniques for producing different grades of compost for gardens/stormwater & erosion control etc.

Economics

- Is composting going to be cost-effective for Vermont?
- How will the removal of organics from the landfill waste stream affect the operation of in-place landfill gas-to-energy facilities
- Funding, funding, funding
- Financial feasibility of collection and processing
- Ignoring anaerobic digestion in favor of less desirable composting

- 2. What do you see as the greatest research need around the implementation of Act 148. Specifically, what observations, theories, and anecdotes could most benefit for supporting data? This could be related to any aspect of implementing Act 148 from collection, hauling, processing, markets for end products, food safety, etc.**

Recipe optimization for consistency and ecological value

- What is the difference between vermicompost and a finished compost? if finished compost is a good material to start with, does vermiculture with vermicompost as a final product justify the 'added value' of vermicompost vs compost?
- Do the 'beneficial' qualities of vermicompost justify taking compost and making vermicompost to produce a 'better product'? Is this a fear? Believing in a myth and promoting it, and investing in it?
- I think the greatest need for research is to figure out a way to produce a consistent, reliable product in the most efficient way possible.

Defining contaminant thresholds

- Herbicide remediation – what is effective?
- Knowing what contaminants will be introduced and how to deal with them
- Chemical contaminants? What levels are safe ppm and lower
- Anti-bacterial residual levels
- How does one appropriately sample to find parts per billion in the whole (relates to herbicide question)?
- Impact of different bulking agents, carbon sources, process to include time, temperature and type of process
- GMO's in compost?
- Biosolids and wastewater residuals are only being tested for known compounds from the 1980-early 90's. many new pharmaceuticals and chemicals are now present but not tested for. Some non-VT composters routinely use biosolids and those composts are sold in Vermont.
- On an industrial scale, how to detect persistent herbicides and pesticides and how to neutralize them.

- Effects of composting bioplastics on finished product
- Research that focuses on the inclusion of non-native plant material/seeds that will inevitably be added to the waste stream by homeowners, municipalities, and treatment controllers.
- Specific composting recipes: what temperatures are required for various organics to be sure any bad organisms are destroyed. Will a certain amount of time make bad organisms harmless? How can biochar affect how compost nutrients are released for plant use.

Collection / Haulers

- Haulers are integral to the success of Act 148. What support do they need to provide efficient (environmental and financial) and successful pickup programs: residential and commercial, especially in rural Vermont!
- Collection of materials → processing → final product: need to come up with 'cookbook' approach with clear goals understandable by a landfill employee, i.e., TRAINING

Economics, Markets and Demand for End Products, Certification Standards

- Carbon sources and economic competition?
- Increasing markets
- Determining compost markets according to demand, i.e., could one town concentrate on one type of compost to streamline the marketing?
- Certified for organic use → how to get more soiled paper, OCC, acceptable to composters
- Also → standards for compost – USCC → this would help alleviate quality concerns, DOT, erosion control, users
- Research on compost use in soil building for stormwater and infiltration benefits
- Value-added composting practices (heat recovery, integration with AD)
- Funding for technical assistance to restaurants, special events, public
- Funding sources for implementation
- Probably the need to develop standards for certifying different grades of finished compost and appropriate uses given the myriad and changing feedstocks and composting processes that will likely emerge as the ban is implemented

Life Cycle Assessment of Compost itself and compared to alternatives

- How beneficial will the leaf, yard and clean wood land fill ban be to meeting the C feedstock issue?
- Efficiency of processing systems to produce a digester
- Advantages and disadvantage of AD vs compost vs animal feed
- Life cycle economic analysis
- What is the total cost-impact of trying to collect this stream separately? Does it have unintended consequences of inefficiencies that threaten to outweigh the benefits?
- Interested in an LCA for home collection
- The cost-benefit of composting and hauling to large processing facilities

- Capacity and infrastructure and efficient transportation routes for all materials
- Mechanisms for methane/CO2 benefits to be monetized, e.g., development of verifiable protocols

Education and Training, Public participation

- How do we create consistent messaging for education and participation when processors utilize different recipes that determine what they accept and what they don't related to organic versus not organic finished product?
- Proper education for home owners, towns and large on how to properly compost.
- How to incorporate food waste into a home gardening compost system
- Consistent messaging on the entire act 148
- Many businesses & institutions often claim that the Department of Health forbids them from collecting food scraps indoors. It would be helpful to have clear information on what is acceptable/unacceptable for collecting food scraps from a public health standpoint
- You mentioned that you don't have enough data. I am interested in performing some of these experiments as a HS/MS science teacher. Students and I like to have meaningful research and experimentation

Contact:

Deborah Neher, Chair and Professor

Dept. of Plant and Soil Science

University of Vermont

www.uvm.edu/~dneher

www.uvm.edu/~pss