

**Minutes of the Technical Awareness Group Meeting**  
For the Seaweed Composting Research  
Supported by the Hinkley Center for Solid and Hazardous Waste Management

**Meeting held, December 15, 2020, 10:00 to 11:30 am (eastern)**

Meeting Participation was through Virtual Connection  
Registration was required to attend this meeting via Zoom

**Attendees:**

*Speakers:*

Afeefa Abdool-Ghany, University of Miami  
Amanda Oehlert, University of Miami-RSMAS  
Helena Solo-Gabriele, University of Miami  
Peter Swart, University of Miami-RSMAS

*Asked to comment on presentation:*

Alyssa Jones-Wood, City of Hallandale Beach  
Mark Almy, City of Fort Lauderdale

*Attendees via computer webinar:*

Alejandro Quintás, NEAT Sand  
Alyssa Jones-Wood, City of Hallandale Beach  
Cathie Schanz, City of Hallandale Beach  
Chip Jones, Beach Raker  
Chris Snow, Consolidated Resource Recovery, Inc.  
Christopher Perry, Florida Department of Environmental Protection  
Daniel Meeroff, Florida Atlantic University  
David Hill, Recycle Today Florida  
Emilio Lopez, SOP Technologies  
John Schert, Hinkley Center for Solid and Hazardous Waste Management  
Josefina Olascoaga, University of Miami -RSMAS  
Karen Moore, Florida Department of Environmental Protection  
Katarzyna Kulpa, Village of Key Biscayne  
Kimberly Moore, University of Florida, IFAS  
Lauren O'Connor, Florida Department of Environmental Protection  
Ligia Collado-Vides, Florida International University  
Mark Almy, City of Fort Lauderdale  
Mark Richards, Miami-Dade County  
Mary Beth Morrison, Solid Waste Authority of Palm Beach County  
Samir Elmir, Florida Department of Health in Miami-Dade County  
Tony Brown, Broward County Solid Waste and Recycling Division  
Valentina Caccia, Division of Environmental Resource Management (DERM)

**Agenda**  
**TAG Meeting, *Sargassum* Composting**

Date: December 15, 2020

Time: 10:00 am to 11:30 am (Eastern)

Location: Virtual (See next page for details)

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|---|----------------------|
| 1. Welcome and introductions                              | Helena Solo-Gabriele |
| 2. Previous work done with <i>Sargassum</i>               |                      |
| • Trends between bacteria and <i>Sargassum</i>            | Helena Solo-Gabriele |
| • Key Biscayne Project work                               | Afeefa Abdool-Ghany  |
| 3. Hinkley Center Research                                |                      |
| • Motivation, Background and Objectives for Hinkley Study |                      |
| • Exploratory Work (March 2020)                           | Afeefa Abdool-Ghany  |
| Lessons Learned   |                      |
| Planting of radish seeds                                  |                      |
| • Visit to composting facility at Fort Lauderdale         |                      |
| Experience at the facility                                | Afeefa Abdool-Ghany  |
| • Visit to Beach Raker                                    | Helena Solo-Gabriele |
| • Preliminary results from composting                     | Afeefa Abdool-Ghany  |
| C:N results   |                      |
| 4. Next Steps   | Helena Solo-Gabriele |
| 5. Additional questions and answers, wrap up              |                      |
| 6. Adjourn  |                      |

Questions: [hmsolo@miami.edu](mailto:hmsolo@miami.edu)

Note: Registration was required to attend this meeting via Zoom

## Minutes

### Questions, Answers and Comments #1 (After item 2 on agenda)

1. Q: Does the algae provide the substrate for the bacteria to grow?  
A: This study is important because it is related to the management strategies for the beach. Different impacts can result depending on the management strategy used. From the results presented, the algae provide the substrate for the bacteria to grow. As the algae decomposes, carbon becomes much more available for the bacteria to thrive. Fresh seaweed has low levels of bacteria. When it decomposes, it provides the substrate for bacteria. The bacteria comes from other sources such as human and animals and then thrives in the substrate environment. Seaweed is a secondary to the bacteria issue.
2. Comment: There's a landfill on the west coast that was trying to get an expansion permit. They were contributing the bacteria to the surf. Falcons were used to keep the seagulls away. Birds were eating the garbage from the landfill. Disconnecting the seagulls from the landfill lowered the fecal coliform problem. On beaches, dogs are used to deter the birds. At landfills near airports, dogs are used because additional winged animals add to the problem.
3. Q: Are there any results from the microbial source tracking (MST) done at Key Biscayne?  
A: Five different markers were analyzed; general enterococci, 2 human markers (HF183 and Hum-2), and 2 animal markers (Gull2 and DogBact). There were differences between the human markers, one was very high while the other produced low results. For the animal markers, they did show up but in very low amounts. The animal sources were very sporadic. Human sources were higher compared to animal sources. Again these results were only measured at the Key Biscayne Beach Club. Certain beaches do have more influence of the gulls. Key Biscayne Beach does not allow dogs, but in the MST results they are still picked up. In terms of the samples that are collected, there were 3 water samples, 3-4 sand samples, and a seaweed sample.

### Questions, Answers and Comments #2 (After description of Beach Raker visit)

1. Q: How long does it take for seaweed to decompose and be ready to use for planting purposes?  
A: 90 to 120 days is the typical amount of time that it takes for the seaweed to decompose. For every 10 yards that is put into the pile, there is about 1 yard of compost produced. There was about an 80-90% loss from water loss and desiccation. One of the cons of removing the seaweed off of the beach, is the amount of sand that is also removed. About 10-20% of sand can be removed. When the seaweed is removed, it can not be placed back on the beach. There is also trash that needs to be removed from the seaweed collected. Another composting facility has usable compost in about 6 weeks. They turn their pile every 4-7 days. The end product is only used on salt tolerant plants such as palm trees. This is the best case scenario use with no additives. Working to remove *Sargassum* while at the same time removing sand would affect the quality of

beach topography, slopes and grading. Not to mention would significantly impact beachgoers.

2. Q: If plants, such as the radish, is grown in the compost, has there been tests done to see the metals concentrations in the seaweed used to make the compost and the radish itself? *Sargassum* is known to contain metals such as arsenic, which can be detrimental to human health.

A: Since the compost used to grow the radishes took place before funding was received from the Hinkley Center, we only have the end product that can be analyzed. When the project was started, samples were not taken of the seagrass used to make the compost. When the radishes are fully grown, there are plans in place to test the radish for metals.

3. Q: If the seagrass will be collected from the beach it is mixed with the plastic bottles etc. Therefore, how difficult is it to sort the material, before is composting?

A: Two different sifting methods are utilized to remove the trash from the collected seaweed. The first methods is picking out the larger materials such as bottles. Biohazards are of concern such as needles. The second type of sifting will remove other types of trash. 70-80% of the trash is removed and disposed of in the regular landfill.

4. Comment: The Amazon River as a source of the *Sargassum* is not fully understood. The data coming out of this source is very limited. It might be interesting to measure the same parameters of this project with other seagrass mixes. *Sargassum* is seasonal and very unpredictable, to make this more sustainable, measuring these parameters in other mixes can give us a better idea of what is happening. When the seagrasses and seaweeds wash up on shore, it is very difficult to separate out the different species. Fauna changes in the seagrass and seaweeds as well.

5. Q: Is *Sargassum* being washed before composting?

A: In one process, washing was not used. As mentioned before it takes about 6-7 weeks to get a useable product depending on the weather conditions that are out there. Testing has been done on grass and the seaweed compost that was not washed. It resulted in the killing off of the grass. The seaweed composting is not good for all plants. If the compost is allowed to sit longer, different plants may be used in the planting process as opposed to the salt hardy plants. Allowing the compost to sit allows for rainwater to naturally flush the salts.

6. Q: Once the compost is analyzed, especially with the impact on the growth of radishes, should we start engaging companies that sell compost in order to determine the potential monetary value of the end-product? This can help to determine the value (and ROI) of the activities to compost *Sargassum*.

There has been marketing of compost in Florida for a long time. Up north, there is a broader market to incorporate organics back into the soil. The soil in Florida is very poor and the market to incorporate organics back into the soil is not well received. Market analyses have been conducted for biosolids and animal manure mixes with yard waste for composting. All of them have a lot of trouble moving their finished product. There are challenges that are specific. With *Sargassum* salt is one of the problems. The whole sale market price is anywhere from negative dollars (paying people to take it) to \$10/cubic yard and \$18-\$20 retail sale. In South Florida specifically, we have mostly lime rock and

it is hard to grow plants. There are a lot of opportunities for education. Marketing of the composted product will be a significant challenge in Florida.

### **Questions, Answers and Comments #3 (After Preliminary Results Presentation)**

1. Q: Was temperature measured in the tumbler composters?  
A: Temperature was measured in the tumbler composters using a glass thermometer. The traditional composting thermometer that is used to tell you when the pile has cured was not used because it was made out of metal. In order to minimize contamination of outside metal sources we opted to use the glass thermometer which was stuck about 5-6 inches into the pile. There are plastic monitoring devices that can be used and placed in the pile to give a constant temperature log of the compost pile. The average for the piles were about 21°C when the piles were initially started and on the second sampling date the temperature decreased to about 19°C. On the second sampling date, there was a cold front so this could have affected the temperatures of the piles.
2. Q: For the leaves or grass clippings used for composting, how "clean" do they need to be? Would it be possible to use leaves/organics collected by the city's street sweepers (sweepers collect leaves, trash on the road and other items on the road)?  
A: The ratio of organics to inerts on street sweepings is on the higher end of containing the inerts. Rocks, sand, glass, pebbles, and tire dust all make up the inerts. These items are not ideal for composting. 2-5% of the inerts can be allowed on finished projects up north. There are materials of concern such as glass that can cut someone, so these materials are not ideal to use in composting. Street Sweeper trash are required to be disposed of differently than yard waste, so in Hallandale Beach they will be utilizing grass clippings from our landscape crew and not street sweepings.

### **Questions, Answers and Comments #4 (After Next Steps Presentation)**

1. Q: Can existing composting companies or organizations also benefit from receiving some *Sargassum* from Hallandale Beach so they can also conduct their own tests with composting *Sargassum*?  
A: Composting is already being used in the government sector. The difficulty is there are more restrictions in the commercial sector once sold or given to other to utilize. Seaweed can't be given away on that level. There are permits and other regulations in place.
2. Q: In Phase II, do you have plans for odor and or vector management?  
A: When visiting the Fort Lauderdale site, there were no odors or vectors. Part of the permit with DEP is that there should be no added components that produce anaerobic decay, e.g., from food. When the pile at Fort Lauderdale initially started there was a smell, but over time the process was perfected by adding a layer of soil on top of the pile to minimize the smell.
3. Comment: There was a decrease in the amount of seaweed pulled off of the beach. Up north there has been an increase in the amount of seaweed that was removed. The storm in June may have been the cause for the decrease in the amount of *Sargassum* on the beaches. The seasons for *Sargassum* are moving and changing.