

Greening of Rubenstein: Green Roof Deli

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The Greening of Rubenstein Interns class has offered students hands-on opportunities to collaborate with their teammates and scholars to generate ideas on how to make our campus more ecofriendly and sustainable. Specifically, our group is working on coming up with ways we can make the Aiken Center's green roof better, both for the environment and the community.

We are focusing on how the fertilizer we're using for the plants on the roof will impact the plants' health and, subsequently, their ability to deal with nutrient uptake and spring stormwater and snowmelt runoff. This project aims to reduce runoff on the roof and work in partnership with another group to collect the remaining water to be used in the building as grey water for toilet flushing. This will reduce the building's environmental impact and get rid of the need for unnecessary energy use to do these tasks.

Currently, Aiken has a LEED Platinum rating, but the real goal is to get to Net-Zero energy. To do this, Aiken would need to mitigate the amount of energy used for electricity, heating, and cooling. Our project would help to achieve this goal because a green roof would help the building reduce heating costs, and collecting the water from the roof will increase building sustainability by reducing the amount of potable water to operate the Aiken Center.

We have many goals as a team to meet our mission. One goal for our group is to first clean and calibrate the eight tipping buckets which are used to measure the amount of stormwater that the eight roof top watersheds sequester and prevent from going into the stormwater system and eventually into Lake Champlain. Our second goal is to design, install, and implement a fertilizer plan for our green roof. Our last goal is to monitor spring runoff by collecting watershed runoff amounts from the tipping buckets.

Currently, we are working on cleaning the tipping buckets and reinstalling them. We took them apart and scrubbed them with brushes. After scrubbing, we rinsed them with bleach and water making sure that they are fully drained and ready to collect spring runoff from the eight watersheds. The reinstalling and calibrating process of the tipping buckets has been both meticulous and educational. We have learned how the tipping buckets operate by taking them apart and reassembling the pieces carefully and precisely. After reassembling, we checked to see if the buckets were working properly, to ensure that we had assembled them correctly. In our last meeting, we visited the green roof to envision what our next steps to meet our goals would be.

In order to reach these goals we have set, we need to do research on many different variables of fertilizer options. Since our ultimate endpoint would be to apply fertilizer to the plants on the roof during the spring, we must decide what form of fertilizer, C:N ratio, release-rate, quantity, and whether we want an organic base for our plan. We must also consider the plant species and their requirements in order to choose a ratio that will be the most beneficial to our specific plants. At the end of April, we will apply the fertilizer and begin monitoring how the nutrients are impacted between the treatments and control plots.

Once we are done with this project, we hope to have a better understanding of how different fertilizers impact different species of plants, as well as what types are most beneficial, and a ballpark figure for how much per unit of measurement should be applied. As a whole, we will have obtained plenty of knowledge on nutrient management and cycling and will be better suited to offer advice on such issues. We will also be more comfortable with seeing how the water cycles in the Aiken building and how we can better improve this process in the future. To ensure that students will have access to our work and to the needed information about the green roof, we will also be creating a Green Roof Guidebook containing step-by-step procedures of cleaning and calibrating the tipping buckets and other green roof-related topics.