



Evaluation of giant sacaton grasses for riparian rehabilitation (RRS4)

Unit process wetlands and riparian zones

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Introduction

Riparian rehabilitation is becoming increasingly important to the environment in the wake of climate change. River habitats, for example in New Mexico, are at risk of becoming polluted which could cause the loss of the natural wildlife and plant life. While these riparian zones can be rehabilitated by planting many different types of plant life, some plants may not be well suited to a desert climate and may not be sustainable without large amounts of water or human assistance. This method investigates the use of beneficial grasses (e.g. to support insects and other wildlife) that can withstand drought as well as be aesthetically pleasing. It is hypothesized that these plants will also become wind barriers.

Methodology

Giant sacatons (*Sporobolus Airoides*) were planted on six plots at Sunland Park ReNUWIt Test-bed site. The experiment was conducted in-situ soil plot that was divided into 40 ft. by 40 ft. sections. The plots were approximately 75 ft. from the Diez Lagos irrigation drainage canal. Of the six plots, a mixture of 3 inch top layer of clinoptilolite zeolite was added to three of the plots. Nine giant sacaton grasses were planted in each of the plots; a total of 54 alkali sacatons.

The plants were then irrigated well until the soil was moist so they could establish roots. Once the plants established the roots, no artificial irrigation will be applied to observe plant response to dry semi-arid climate with minimal rainfall.

Objective

The objective of this project is to setup a pilot scale experiment in the field to study the use of giant sacatons for riparian rehabilitation and wind barriers. The goal of the study is to improve our understanding of riparian restoration by introduction of native plants and their ability to survive and thrive in brackish water as well as in a desert climate. The long-term goal is to use these types of grasses for restoration of riparian zones by providing habitat wildlife and as a natural wind barrier.

Results



Figure 1. Giant Sacaton planted on 2/8/2019.



Figure 2. Irrigation of the plots after first day of planting.



Figure 3. Giant Sacaton progress two weeks after planting and irrigation.



Figure 4. One of the six 40 ft. by 40 ft. two weeks after planting and irrigation.



Figure 5. Giant sacaton grasses are looking healthy



Figure 6. Giant Sacatons one month after planting



Figure 7. All plants are growing well (April 19, 2019)



Figure 8. Soil is still moist after two months of planting

Results

This Project started in January 2019. The following has been completed:

- The Giant Sacaton have established their roots and are acclimating to the environment (brackish water, EC of 1.0-1.4 us.
- The Giant Sacatons have grown to an average height of 1 ft. 3 in. and have an average diameter of about 1 ft since planting in the middle of winter

The sacatons growth and survival will continue to be monitored and their progress recorded. Only 1 of the 54 Sacatons planted has shown some stress. Soil moisture and salinity in each of the plots are being monitored to asses adaptability of sacatons in this type of environment.

Next Steps

The following are anticipated during growing season of 2019

- Monitor soil moisture and salinity
- Analyze soil properties for macro and micro nutrients
- Monitor microclimate
- Analyze plant tissue for chlorophyll content and arsenic
- Asses plant growth and survival, and root development
- Report the results

Conclusions

Preliminary results show the giant sacaton have started to establish an indication of root establishment. The sacatons have grown considerably since they were planted on February 8,2019. A few of the plants have shown some signs of stress but overall the sacatons seem to be adapting well. The sacatons will continue to be monitored through out the growing season of 2019 and will be evaluated for riparian rehabilitation in urban environment of arid environments.

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