**Introduction**

Biochar is a co-product of thermochemical conversion of biomass. Studies have demonstrated its ability to reduce greenhouse gas emissions by sequestering carbon and improve soil characteristics such as water retention, pH, CEC, etc. A test was conducted to observe the effects of 2 different biochar soil mixtures on plant growth.

**Objectives**

- Study the differences between plant growth in premixed soils, and non-premixed soils with biochar.
- Observe the differences in soil properties.

**Methodology**

Treatments were split in:

- Soil only and Red Oak and Corn Stover Biochar mix (50% by weight).
- Half of the plots were prepared, one week before planting and the other half were prepared on the day of planting.
- Half of those plots were fertilized with 1g of fertilizer (15-15-15) [Photo 2]. Each combination of Biochar x preparation and Fertilization rate were done in triplicates (appropriately randomized).
- Water was applied Monday and Friday with 20 mL of water.
- Leachate was collected at the beginning and at the end and the pH was measured.

**Results**

Some problems were encountered when starting this experiment. Volume from the premixed samples of soil (Control) were lost from water added to collect leachate, so sand was added to even the volume out. To prevent this from happening on the non-premixed samples, we placed paper towel underneath so there would be no loss of sample. Also, the plants which were growing from the samples with fertilizer, in both the premixed and non-premixed samples, died. Germinated seeds were added to observe their growth, but were excluded from the collected measurements.

**Conclusion**

- Adding biochar to soil changes the chemical and physical properties of the soil.
- High amendment rates could dramatically impact the pH level of the soil and the availability of nutrients, special attention should be paid to processing conditions and types of biochar applied. Premixed biochar and soil look necessary for stabilization of the soil and better growth.
- 50% of biochar for this type of soil seemed too much. It increased pH levels higher than they were desired. Smaller additions and longer mixing times are strongly recommended.