

IFAFS Cheatgrass Control & Range Restoration Project

Pretreatment Soil Organic Matter Sampling

Because soil organic matter (SOM) appears to be a soil property that undergoes rapid changes when a site is converted from native species to cheatgrass, pretreatment measurements of SOM are needed in order to better understand and interpret results from both within and between study sites.

Sampling Design

Collection of soil samples for SOM will occur in parallel with the pretreatment vegetation measurements. One soil sample will be collected at the mid-point of each 50-m line-point transect, and the samples from each of the 3 lines that make up a vegetation plot will be bulked together. Soil sampling will occur over 2 soil depth increments: 0-5 and 5-20 cm. This design results in a total of 8 bulked soil samples from each site in each year: 4 samples for the 0-5 cm depth increment and 4 for the 5-20 cm increment.

Materials

- Soil tin, auger, or shovel for collecting soil
- 2 buckets for mixing and bulking soil samples (labeled 0-5 & 5-20 cm)
- Ice and cooler for transport
- Butcher paper
- Quart & gallon size “zip-lock” freezer bags

Methods – Field Collection (all sites)

1. Locate the mid-point of each line-point transect.
2. Clear all non-embedded litter from the soil surface.
3. Collect approximately 250 ml of soil from the 0-5 cm depth increment. Note that a 3” (8 cm) diameter soil tin pushed 2” (5 cm) deep into the soil yields approximately 250 ml. Place the 0-5 cm soil sample into a labeled bucket.
4. Continue coring down into the soil, collecting soil from the 5-20 depth increment. Be careful that soil from the upper 0-5 cm layer does not mix with the deeper soil layer – an easy way to make sure that soil from the upper layer does not fall into the hole is simply to enlarge the hole before taking the 5-20 cm sample. Place the 5-20 cm sample into the 2nd labeled bucket.
5. Repeat steps 1-4 for the 2nd and 3rd lines that make up a vegetation plot, placing the 0-5 and 5-20 samples from these other lines into the appropriate bucket.
6. Thoroughly mix the soil in the 2 buckets. Place the soil sample in a labeled sample bag and place the sample in the cooler on ice for transport to the lab.
7. Continue to the next set of transects and repeat steps 1-6.

Methods – Lab Preparation

8. Once soil samples are back at the lab, they need to be air dried as soon as possible. Open the bags and them out on lab or greenhouse bench. If needed, periodically mix the sample in the bag to break up any clods and expose wet soil to the air.
9. After samples are air dry, fill a labeled quart zip-lock freezer bag approximately ~1/3 full if soil is fine or ~3/4 full if soil is gravelly. Store samples until SOM analyses (by Jay Norton) can proceed.
10. Archive remaining soil sample.