

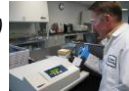
## How To Collect Soil Samples

Jean Reeder Ph.D. Soil Ecologist  
 jjbreeder@comcast.net  
 Consultant to CSU Soil Testing Lab  
 Soils Instructor for CSU Extension and Denver Botanic Gardens

February 10, 2018

## Soil Testing Options

- Soil test kits (\$10 to \$300)
  - Usually not reliable or precise enough to make management decisions
  - Chemistry usually developed for neutral/acidic soils
  - Limited data provided: pH, N, P, K  
*need more than this!*
- Send soil sample to a lab (about \$35)



© Jean Reeder Consulting. Do not copy without permission

## Soil Testing: *Where can I have my soil tested?*

- CSU Soil Testing Lab  
<http://www.soiltestinglab.colostate.edu>

CSU sample bottles/instructions/form available at County Extension Offices, and various Colorado Front Range nurseries (see list of locations on Lab's website)

- Other labs: check for price, analyses provided
- Don't compare results between labs (they often use different methods)

**Pick a lab and stay with it**

© Jean Reeder Consulting. Do not copy without permission

## Soil Testing: *When to sample?*

- Any time of year if the soil is not frozen;  
 spring & fall most common
- ***NOT*** within ***30 days*** of application of fertilizer, compost or manure
- Spring is a good time to sample, as soon as the soil dries out, just before new spring growth
- Sample when plant problems arise and insect or disease problems are not apparent

## Soil Testing *How many soil samples should I collect?*

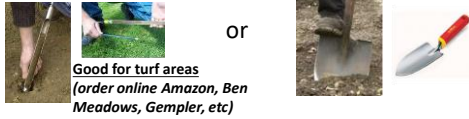
- One sample should represent 1 soil zone
  - Uniform area in terms of slope, drainage, texture and management
  - Collect separate soil samples for areas that are fertilized, amended and irrigated differently, e.g.
    - turf
    - flowers
    - trees/shrubs
    - fruits, vegetable garden
    - for raised beds, one sample per bed if different soil mixes were used

## Soil Testing: *How often to sample?*

- Once to measure baseline properties of all your soil "zones"
- If soil properties are stable and nutrients adequate, repeat every ~4-5 years to re-establish baseline (replenish N each year as needed)
- OR–
- Repeat when dramatic changes are being made to the soil (e.g. adding manure, biosolids or compost to raise OM to 5%)
- Repeat if plant problems develop and no obvious insect or disease problem

### Collecting the soil sample: equipment

- Soil sampling probes, shovels or trowels (*clean, no rust*)



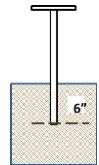
- Clean plastic bucket or tub (*not galvanized metal or brass*)



© Jean Reeder Consulting. Do not copy without permission

### Collecting the soil sample: sample depth

- Sample the primary rooting depth
- For urban landscapes:
  - Top 6" (*most uniform in receiving amendments, tillage, etc.*)



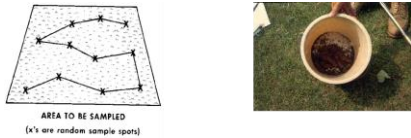
In turf areas, collect 6" of soil below the thatch layer. Don't include thatch in sample.

Be consistent!

### Collecting the soil sample: subsampling

(multiple subsamples = 1 sample)

- Depending on the size of the zone, collect 5 to 15 sub-samples randomly within the designated area, depending on the size of the area, combine in one container



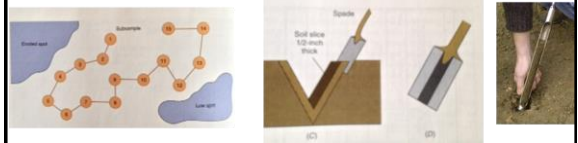
Don't collect soil samples when the soil is really wet or really dry. Collect when soil is "moist" to "slightly dry", i.e. "workable"

© Jean Reeder Consulting. Do not copy without permission

### Collecting the soil sample: subsampling

(multiple subsamples combined into 1 sample)

- Avoid sampling near roads, paths, fences, buildings, "odd" areas e.g. low spots or eroded areas.
- Scrape away surface litter
- Collect the ~same amount of soil from each sampling area, to the same depth
- Composite subsamples into one container



© Jean Reeder Consulting. Do not copy without permission

### Collecting the soil sample: sub-sampling

- All subsamples together in one clean plastic container
  - Break up clods to pea-size or smaller
  - Remove plant debris, rocks
  - Mix thoroughly
  - Remove ~2-3 cups
- This is the sample that goes to the lab*
- Spread on paper towels
  - Air dry (not in the sun, not in the oven)
  - Fill sample container (*CSU sample bottle, or quart ziplock bag*), fill out the form and sample label
  - Send to lab ASAP with payment



© Jean Reeder Consulting. Do not copy without permission

### Soil Testing: *How long does it take?*

- Test results are sent to the customer within two weeks of the lab's receiving the sample
- CSU Soil Testing Lab also does plant tissue and water sample analyses
  - Contact the lab for information
  - [www.soiltestinglab.colostate.edu](http://www.soiltestinglab.colostate.edu)
  - 970-491-5061

© Jean Reeder Consulting. Do not copy without permission