



## Soil sampling basics

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### Useful Facts

- The sample you submit should be representative of the area.
- Sandy coastal plain soils should be tested every two to three years on average. Fine-textured soils from the piedmont or mountains should be tested every three to four years.
- Test results and recommendations can vary within short distances.
- A detailed map or an aerial photograph is useful for outlining fields and assigning permanent identification codes (five characters maximum).

### Characteristics of Predictive (Routine) Soil Samples

- The grower is primarily interested in receiving lime and fertilizer recommendations.
- The area sampled has no known history of fertility problems.
- Samples are processed in the order received. It may take one to several weeks for analysis to be completed.

### Characteristics of Diagnostic (Problem) Soil Samples

- Crops/plants have not responded as expected, and the grower suspects a nutrient problem.
- Diagnostic samples are analyzed like predictive ones except soluble salts are also measured.
- The best diagnostic samples are actually paired samples. Comparison of samples from both good and bad areas makes it easier to confirm a fertility problem.
- Problem samples have priority over predictive samples. They are moved to the head of the line and usually processed within one week or less. [Note: Don't try to get predictive samples processed more quickly by labelling them as diagnostic samples. It won't work.]
- Shipping packages containing diagnostic samples must be clearly marked so they will not end up mixed in with predictive samples.

### Taking Samples

- For agricultural samples, take 15 to 20 cores from each area.
- For lawn and garden samples, take 6 to 8 samples per area (front, back, side, etc.).
- Use a clean, steel sampling instrument. A soil probe is best, but a shovel will work.
- Place each soil core into a clean plastic bucket. Avoid using metal buckets or containers.
- Walk a random pattern over the sampling area.
- Look for changes in soil color, texture, slope and history to establish separate sampling areas.

- Do not group together cores from areas that you know have received different treatments. These special areas should be sampled separately.
- Avoid field borders, ditch banks, old brush piles, burn sites, etc.
- If crop response has been different in an area and the area is large enough to manage separately, then sample it separately.
- The sampling depth for agricultural land where conventional tillage is practiced is 6 to 8 inches. In areas where a pasture or hay crop is to be established or a conservation tillage or no-till plan started, sample to a 6- to 8-inch depth. Where an existing sod is already established, such as pasture or hay, sampling depth is 4 inches. Where conservation or no-till is established, sampling depth is 4 inches.
- Samples from lawns should be taken to a depth of 4 inches. Samples from gardens, shrubs or any other homeowner site should be taken to a depth of 4 to 6 inches.
- Sampling areas should be units of manageable size. No sample should represent an area larger than 15 to 20 acres. Extremely small areas can also be difficult to treat.
- If soil is too wet to till, it is likely best to wait for dryer conditions before taking samples. Wet soils are difficult to mix thoroughly and may affect the quality of the subsample taken.
- After sampling an area, thoroughly mix the sample breaking up clumps and removing any large particles of trash. Fill the sample box to the fill line marked on the side of the box. Be sure the box is marked with the correct sample identification and the grower name.

### **Submitting Samples**

- Put samples in NCDA&CS sample boxes, which are available at county Cooperative Extension offices and from the NCDA&CS Agronomic Division office in Raleigh.
- Use permanent ink to label each sample box and complete the appropriate sample information form. These forms are available online at [www.ncagr.gov/agronomi/forms.htm](http://www.ncagr.gov/agronomi/forms.htm). Do not use felt tip pens since most of them do not contain waterproof ink. Boxes labeled with a pencil can also be very difficult to read if the sample box becomes dirty.
- Select the appropriate crop code from the back of the sample information form, and write it in the appropriate column on the front of the form.
- Do not put soil in a plastic bag inside the sample box. Results and recommendations for samples received in plastic bags will be delayed.
- Do not tape sample box seams unless the sample is from a quarantined area.
- Do not place sample boxes inside a plastic bag before shipping. Moisture in samples may cause boxes to deteriorate.
- Do not put sample information forms inside soil sample boxes. Attach form(s) to the outside of the shipping box or put them inside the shipping box next to or on top of the samples.
- Do not use sample boxes as mailing containers.
- Do not send samples in manilla envelopes, padded or nonpadded. Samples should be shipped in a sturdy, corrugated cardboard box.
- To track your samples and receive e-mail notification when they arrive at the NCDA&CS lab, put a bar-code label on the outside of each shipping container. Visit [www.ncagr.gov/agronomi/](http://www.ncagr.gov/agronomi/) and select the **Bar-code shipping labels** link.