

How to take a Plant Tissue Test



Why should you test?

Tissue sampling is an important part of a crop fertility program. Tissue analysis shows if the crop is taking up the nutrients from the soil or through the tissue from a foliar application. Nutrient deficiencies in plants can result in a poor quality crop with lower than average yields. This is true even if the symptoms are not yet visible. Different deficiencies can also show similar symptoms. Tissue testing can provide valuable information on nutrient levels and can help prevent further crop damage.

Tissue testing results shouldn't stand alone. Analyze your soil, too. Together they can be used as an effective monitoring tool. This information can be used to improve management practices that can impact crop nutrient uptake.

TIP

Nip problems in the bud. Testing both plants and soil for nutrient deficiencies can protect crop quality and yield before it becomes a problem.

Other factors can also affect how easily the crops absorb nutrients. These include plant variety, soil temperature, soil compaction, moisture level, tillage practices and pests.

The timing of when you take tissue samples is critical because the optimum nutrient levels for each crop are established at specific growth stages. Once you've taken a sample, send it to Laboratory Services for testing as soon as possible. The tissue results, when compared to the Nutrient Sufficiency Charts, will tell you if your crop has sufficient nutrients for good growth and quality.

What Nutrient Sufficiency Tables tell you

Nutrient sufficiency tables show the normal (sufficient) range for different nutrients for specific crops.

TIP

Make sure you sample the right plant part at the right time.

Nutrient levels that are higher than normal won't likely increase crop growth and in some instances, can be toxic. Levels that are below normal can help you to diagnose a deficiency that may not yet be visible in a crop. By the time symptoms become visible, quality and yield may already be affected.

Nutrient levels vary within different parts of the plant and can increase or decrease at different growth stages. The sufficiency (normal) levels for each crop have been researched and fine-tuned for specific types of plant tissue and growth stages.

Tissue Sampling Guide and Nutrient Sufficiency Tables

– When and what to sample and what the sufficiency levels should be

Different crops call for different sampling times and plant parts. Fact sheets with crop-specific information are available from Laboratory Services for field, vegetable, and fruit crops. These fact sheets explain optimum sampling time, techniques, and expected nutrient results.

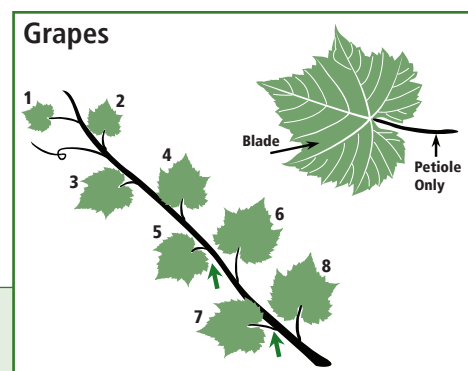
Taking Tissue Samples

TIP

Taking samples the right way the first time saves you time and money in the long run.

No matter what crop you want to sample, the general techniques are the same.

- **Sample the right plant part at the right time**
 - Check the sufficiency table to make sure you take samples at the right growth stage. Take samples from 10 to 20 different areas of the field to make a final sample. Walk in a zigzag pattern across the field while taking samples. Don't sample from the border or shaded areas.
- **Sample only mature leaves**
 - Don't include young leaves, old mature leaves, dead tissue, roots, stems, or soil material in the sample. Soil, debris and foliar fertilizers can be removed from leaves by rinsing with water. Make sure the leaves are patted dry before placing them in paper bags.
- **Get large enough samples**
 - Sample sizes need to be large enough for Laboratory Services to grind a sample large enough for testing. Samples for large-leafed crops should contain 20 to 30 leaves. Small-leafed crops should have 40 to 50 leaves, or about two full compacted handfuls. Petiole or leaf stem samples should fill a sandwich-sized bag, approximately 100 to 150 petioles.



A good sample

- is taken from the right plant part at the right growth stage
- is taken from mature leaves
- is never taken right after pesticide or fertilizer treatment
- is large enough for Laboratory Services to analyze
- is put into paper bags, never plastic bags or metal containers
- is properly labelled with your name, field name or number, date, crop, and growth stage
- is never frozen
- is taken to the lab immediately

NOTE

- **Use paper bags for samples**
 - Leaves must be dry when putting them into paper bags. Don't use plastic bags because they can trap moisture and promote growth of fungi and decay. Never use metal containers because they can contaminate the sample.
- **Don't sample right after spraying the crop with nutrients or pesticides**
 - Leaf samples that are covered with spray residue can affect the analysis.
- **Properly label your samples**
 - Label the sample paper bags with your name, field name or number, date, crop, and growth stage. Be sure to label the sample with the same identification as the corresponding soil test.
- **Send fresh samples to Laboratory Services immediately**
 - Delays can cause nutrient loss in samples, making the analysis inaccurate. Don't freeze the sample.

- **Ask for the correct test analysis**
 - Plant Tissue Analysis - T1 (Standard Package). If you are testing grapes or blueberries include a sulphur test.
- **We recommend you also take a soil test for the field at the same time.**

Tissue Sampling to Diagnose a Deficiency

If there are plants that look different from the rest of the crop, a second sample of abnormal plants should be sent for analysis.

- Sample the healthy plants following the instructions above.
- Sample the abnormal plants from the center of the areas which are showing symptoms.
- Take a separate soil sample from the abnormal areas. Record these areas on a field map.
- Clearly mark the sample bags as abnormal samples.

Common Mistakes of Taking a Tissue Sample

- Taking all the samples from one area of the field. This won't be representative of the field.
- Not taking a large enough plant sample will result in the sample being rejected by Laboratory Services.
- Sampling only the abnormal plants. There are no normal tissue results to compare the analysis.
- Sampling at incorrect growth stages or plant part will not provide you with the correct information.
- Waiting too long to send the sample to Laboratory Services may result in the sample degrading and provide inaccurate information.

TIP

Remember the analysis is only as good as the sample!