The key to tissue testing is to take a representative sample from the proper plant part, at the correct stage of growth, and provide enough plant material for the laboratory to properly analyze the sample. A “softball” size sample should be enough material. Include a soil sample to aid in the interpretation of the results and the diagnosis of the problem, if one exists.

For crops not listed, please contact AgSource.

1. As with soil sampling, select the area(s) to be sampled. The value of plant analysis for diagnosing and monitoring the nutritional status of plants hinges largely on the care that is taken in collecting, handling and analyzing the gathered plant material. Unreliable and misleading interpretations will occur unless proper steps are taken to minimize errors from each of the above tasks. For this reason, standard collection procedures are essential for success. Below are steps that will help standardize the collection and handling processes.

Steps for Collecting:

1. If possible, collect the samples and ship them to the laboratory the same day. These samples are still biologically active. Storage at room temperature will affect the reported values. If immediate shipment is not possible, store samples in a refrigerator or dry samples with low heat (less than 160°F). Do not sample from stressed areas – water stress, heat stress or waterlogged.

2. Collect samples in a paper or cloth bag. DO NOT use plastic. Samples need to be allowed to breathe during transport. Do not soak the samples. Water-soluble nutrients (nitrate, potassium, sulfate) will be leached away, providing low reported values.

3. Completely fill out laboratory paperwork. Essential information includes: grower name, crop type, unique sampling identification, date sampled and analysis package. Laboratory information sheets are available at the AgSource website.

4. Do not sample from stressed areas – water stress, heat stress or waterlogged.

5. If sampling from a mixed crop (alfalfa/grass forage), sample each species separately.

6. Collect samples at the same time of day each time you sample. Nutrient values will change as the day progresses.

7. Soil adhering to the plant tissue needs to be removed by brushing with a paper or cloth towel.

8. The sample may be washed with deionized water; however, do not soak the samples. Water-soluble nutrients (nitrate, potassium, sulfate) will be leached away, providing low reported values.

Handling and Shipping Instructions:

1. If possible, collect the samples and ship them to the laboratory the same day. These samples are still biologically active. Storage at room temperature will affect the reported values. If immediate shipment is not possible, store samples in a refrigerator or dry samples with low heat (less than 160°F).

2. Collect samples in a paper or cloth bag. DO NOT use plastic. Loosely pack them into a shipping box. To avoid molding, samples need to be allowed to breathe during transport.

3. Completely fill out laboratory paperwork. Essential information includes: grower name, crop type, unique sampling identification, date sampled and analysis package. Laboratory information sheets are available at the AgSource website.

4. Ship samples to the laboratory as quickly as possible.

Complete Leaf Package:

- Total Nutrients: Nitrogen, Phosphorus, Potassium, Magnesium, Calcium, Sodium, Sulfur, Zinc, Manganese, Copper, Iron, Boron, Aluminum.

Sampling Guide: Plant Tissue

- Plant stage of growth, plant part, and number of plants to sample for some common field crops. The table below lists the proper stage of growth, plant part, and number of plants to sample for some common field crops.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Stage of Growth</th>
<th>Plant Part</th>
<th>No. of plants to sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa</td>
<td>Bud to first flower</td>
<td>Top 6 inches</td>
<td>35</td>
</tr>
<tr>
<td>Alfalfa, Hay</td>
<td>Harvest</td>
<td>Whole plant</td>
<td>25</td>
</tr>
<tr>
<td>Barley</td>
<td>Prior to heading</td>
<td>Newest fully developed leaf</td>
<td>50</td>
</tr>
<tr>
<td>Snap bean</td>
<td>Prior to or at initial flower</td>
<td>Newest fully developed leaf</td>
<td>25</td>
</tr>
<tr>
<td>Grasses</td>
<td>Prior to heading</td>
<td>Newest fully developed leaf</td>
<td>50</td>
</tr>
<tr>
<td>Corn, Field</td>
<td>12 inches tall</td>
<td>Whole plant</td>
<td>20</td>
</tr>
<tr>
<td>Corn, Field</td>
<td>Pre-tassel</td>
<td>Leaf below whorl</td>
<td>15</td>
</tr>
<tr>
<td>Corn, Field</td>
<td>Tassel to silk</td>
<td>Ear leaf</td>
<td>15</td>
</tr>
<tr>
<td>Corn, Silage</td>
<td>Ensiled or chopped</td>
<td>Whole plant</td>
<td>2 qt</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>Tassel to silk</td>
<td>Ear leaf</td>
<td>15</td>
</tr>
<tr>
<td>Corn, Pop</td>
<td>Tassel to silk</td>
<td>Ear leaf</td>
<td>15</td>
</tr>
<tr>
<td>Mint</td>
<td>Flowering</td>
<td>Whole plant</td>
<td>25</td>
</tr>
<tr>
<td>Oats</td>
<td>Prior to heading</td>
<td>Whole plant</td>
<td>50</td>
</tr>
<tr>
<td>Pea, Canning</td>
<td>Prior to or at initial flower</td>
<td>Newest fully developed leaf</td>
<td>25</td>
</tr>
<tr>
<td>Potato</td>
<td>Prior to or at initial flowering</td>
<td>4th petiole and leaflet(whole leaves)</td>
<td>40</td>
</tr>
<tr>
<td>Potato</td>
<td>Prior to or at initial flowering</td>
<td>4th petiole and leaflet(whole leaves)</td>
<td>40</td>
</tr>
<tr>
<td>Potato</td>
<td>Tubber bulking</td>
<td>4th petiole from top</td>
<td>50</td>
</tr>
<tr>
<td>Potato</td>
<td>Tubber bulking</td>
<td>4th petiole from top</td>
<td>50</td>
</tr>
<tr>
<td>Rye</td>
<td>Prior to heading</td>
<td>Newest fully developed leaf</td>
<td>50</td>
</tr>
<tr>
<td>Sorghum, Grain</td>
<td>Prior to heading</td>
<td>2nd fully developed leaf</td>
<td>20</td>
</tr>
<tr>
<td>Sorghum, Sudan</td>
<td>Prior to heading</td>
<td>Newest fully developed leaf</td>
<td>50</td>
</tr>
<tr>
<td>Soybean</td>
<td>Seedling stage</td>
<td>Entire above ground portion</td>
<td>20-30</td>
</tr>
<tr>
<td>Soybean</td>
<td>Prior to or at initial flowering</td>
<td>Newest fully developed leaf</td>
<td>25</td>
</tr>
<tr>
<td>Sugar Beet</td>
<td>Prior to or at initial flowering</td>
<td>Newest fully developed leaf</td>
<td>25</td>
</tr>
<tr>
<td>Sunflower</td>
<td>Florets about to emerge</td>
<td>Newest fully developed leaf</td>
<td>20</td>
</tr>
<tr>
<td>Wheat</td>
<td>Prior to heading</td>
<td>Newest fully developed leaf</td>
<td>50</td>
</tr>
</tbody>
</table>

*NOTE: For crops not listed, please contact AgSource.

For more information, visit http://www.soils.wisc.edu/extension/pubs/pa_sampling.pdf.
Submit top 6 inches or top half of plant if less than 8 inches tall. Sample 25-30 plants.

**CORN**

4 to 20 inches tall
Cut stalk off about 1/2" above ground level. Submit 20-25 whole plants.

Over 20 inches but prior to tasseling
Submit first fully developed leaf from top (first leaf below whorl). Cut leaf at its base where it joins sheath. Sample at least 20-25 plants.

Tasseling to pollination
Submit leaf below and opposite ear. Cut leaf at its base where it joins sheath. Sample at least 20-25 plants.

**SORGHUM**

Prior to or at heading
Submit the second leaf from top of plant. Sample 20-30 plants.

**TOBACCO**

Before bloom
Submit first fully developed leaf from the top. Sample 20-25 plants.

**SMALL GRAINS, FORAGE GRASSES**

4 inches to heading
Submit first fully developed leaf from top. Remove blade where it joins main stem. Sample 60-80 plants.

**ALFALFA, OTHER LEGUMES**

6 inches to flowering
Submit top 6 inches or top half of plant if less than 8 inches tall. Sample 25-30 plants.

**SOYBEANS, FIELD BEANS**

4 inches to pod set
Submit first fully developed trifoliate leaf from top. Sample 20-25 plants.

**SUGAR BEETS**

Anytime during growing season
Submit petioles or leaf blades of a fully extended, mature leaf. Sample 40 petioles.

**COTTON**

Following first bloom
Submit the petiole or leaf blade of the youngest fully mature leaf on the plant. Sample 25-30 plants.

**GRAPE**

Bloom time, after full bloom or mid-summer*
Submit petioles from matured leaves adjacent to fruit clusters at bloom time or after full bloom. In mid-summer, samplings may be used when potassium level is low at first sampling or for confirmation of deficiency symptoms. For later sampling, submit petioles from the most recently matured leaf. Sample 60-60 plants. For petioles, sample 60-70 plants.

* In order to diagnose trouble spots or to monitor nutrients programs, the above crops may be sampled at earlier or later sampling dates. If a different sampling time is desired, more meaningful interpretation levels may be given for the crops with an asterisk (*) if the stage of growth (or days after emergence) is indicated on the information sheet.

**PEACH, NECTARINE**

June 15 - July 30*
Submit first fully expanded matured leaves and petioles near base of current year’s growth. Sample 30-35 trees. For petioles, sample 50-60 plants.

**POTATO**

Early bloom or early tuber set
Submit first fully expanded matured leaf located 3-5 leaves from growing point. Sample 20-25 plants. For petioles, sample 60-70 plants.

**SUGAR BEETS**

Anytime during growing season
Submit petioles or leaf blades from spring cycle growth on non-flushing, non-fruiting terminals OR most recently matured leaves and petioles from spring cycle growth on non-flushing, fruiting terminals. Do not sample both ways. Specify on the information sheet whether the sample is from a non-fruiting terminal or a fruiting terminal. Sample 20-25 trees. For petioles, sample 60-70 plants.

**ALMOND, APRICOT, APPLE, CHERRY, FIG, PEAR, PLUM**

Early bloom or early tuber set
Submit petioles from matured leaves adjacent to fruit clusters at bloom time or after full bloom. In mid-summer, samplings may be used when potassium level is low at first sampling or for confirmation of deficiency symptoms. For later sampling, submit petioles from the most recently matured leaf. Sample 60-60 plants. For petioles, sample 60-70 plants.

**GRAPES**

June 15 - July 30*
Submit first fully expanded matured leaves and petioles near base of current year’s growth. Sample 30-35 trees. For petioles, sample 50-60 plants.

* In order to diagnose trouble spots or to monitor nutrients programs, the above crops may be sampled at earlier or later sampling dates. If a different sampling time is desired, more meaningful interpretation levels may be given for the crops with an asterisk (*) if the stage of growth (or days after emergence) is indicated on the information sheet.