

Sampling Chart: Field Crops



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. Follow these standardized sample collection instructions to ensure the highest degree of accuracy in reporting.

Steps for Collecting

- 1 As with soil sampling, select the area(s) to be sampled. Each unit should not represent more than 20 acres. A randomized pattern is essential for determining the average. At least 20 separate plants should be sampled. This is necessary for obtaining a true average as well as giving the laboratory enough material to perform the analysis. For petiole samples, at least 50 plants are needed to collect enough material.
- 2 Determine the proper plant part. As a general rule, you want to collect the leaf blades or petioles from the most recently mature leaves. Avoid very mature leaves or not fully developed leaves. The attached diagrams include sampling schemes for several common agricultural crops. For a more complete listing of crops, call AgSource Laboratories for specific directions.
- 3 Avoid sampling from unusual areas. For monitoring fertility trends, it is important to look at only healthy or actively growing areas. Chlorotic or slow growing areas will have inconsistent nutrient concentrations, providing false conclusions. If this is the major concern, sample separately and compare the results with the result from the "healthy" areas.
- 4 Do not sample from stressed areas – water stress, heat stress or water logged.
- 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.

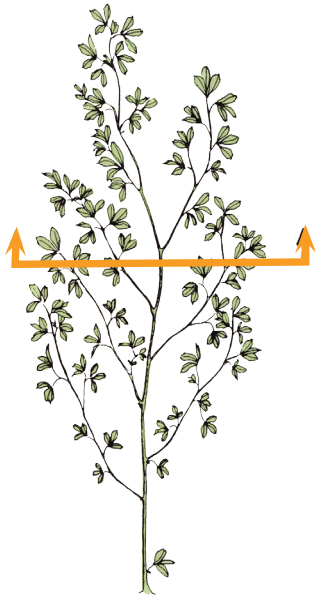
Handling and Shipping Instructions

- 1 If possible, collect the samples and ship them to AgSource Laboratories 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 www.agsource.com.
- 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

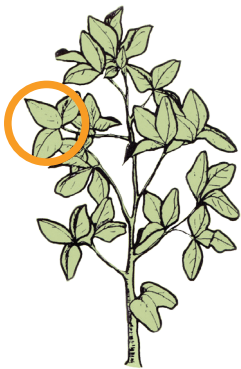
Alfalfa, Other Legumes



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

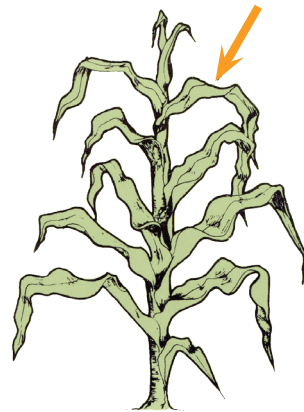
Submit first fully developed trifoliate leaf from top. Sample 20-25 plants.

Corn



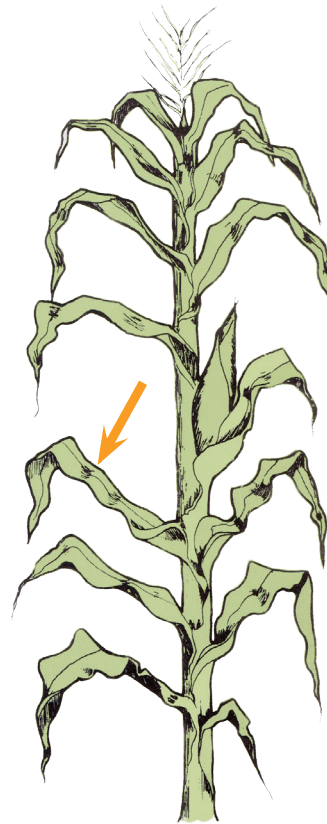
4 to 20 inches tall

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.

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.

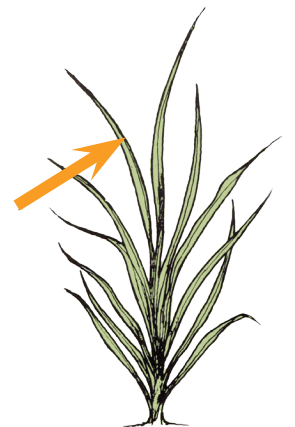
Sorghum



Prior to or at heading

Submit the second leaf from top of plant. Sample 20-30 plants.

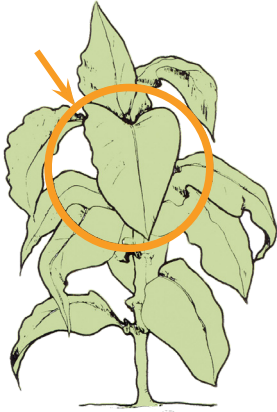
Small Grains, Forage Grasses



4 inches to heading

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

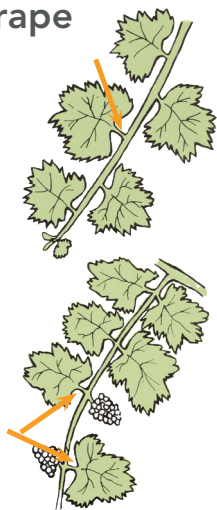
Tobacco



Before bloom

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

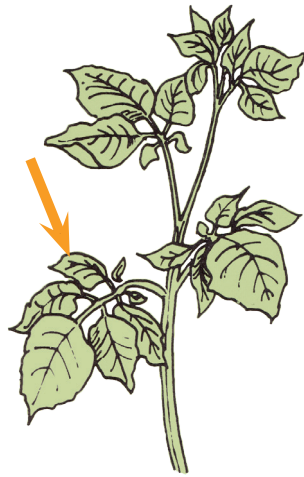
Grape



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 40-60 plants. For petioles, sample 60-70 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.

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.

Citrus



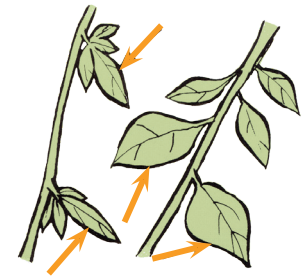
Mid-August–Mid-October*

Submit most recently matured leaves and petioles 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 and Plum



Almond, apricot
June 1–July 15*
all others June 15–July 15*

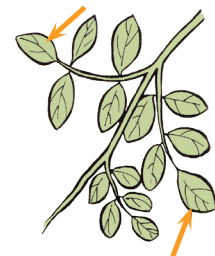
Submit first fully expanded mature leaves and petioles on non-fruiting spurs

OR

first fully expanded matured leaves and petioles near base of current year's growth.

Do not sample both ways – use one method or the other depending on the age and condition of the trees. Sample 20-25 trees. For petioles, sample 60-70 trees.

Walnut



July 15–August 15*

Submit terminal leaflet and petiole from a terminal leaf. 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.

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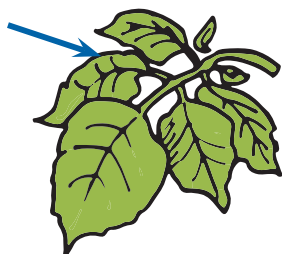
The key to tissue testing is to take a representative sample from the proper plant part, at the correct stage of growth, and provide enough plant material for the laboratory to properly analyze the sample. A "softball" size sample should be enough material. Include a soil sample to aid in the interpretation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

The chart below lists the proper stage of growth, plant part, and number of plants to sample for some common field crops. If the tissue sample is collected at any other time in the growing season, it may not be possible to interpret the results properly.

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

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

Leaf – entire leaf, including the petiole



Petiole – remove and discard leaflets

