



Read these instructions carefully

Taking a sample

Use instructions in this publication to obtain samples which accurately reflect nutritional status of the crop submitted for analysis. Results of analysis will determine whether problems in growth responses are due to a nutritional problem. Recommendations will be made for any nutritional problem found.

Precise results are possible only when carefully selected plant material is submitted for analysis. Accurate sampling requires that definite parts of a plant be selected at certain stages of plant development. Please note that different instructions are given for vegetables and flowers grown outdoors and those grown in greenhouses.

Completing an information form

In each mailing kit is an information form designed to provide a direct communication with the laboratory and crop specialist who will interpret the analysis and provide recommendations. *Be sure to complete this form.* Interpretations cannot be made if sufficient information is not included.

What to sample

Response of plants to nutritional conditions differ for each variety, stage of development, and growing area. As near as possible, select plant parts representative of the particular variety and growing area. When sampling mixed grasses and other mixed forages, separate species into different samples.

Sampling instructions for most plants are given in this publication. Where instructions are not given for a particular plant, it is best to sample leaves in the upper portion of plant, and leaves which have recently reached maturity. Do not sample extremely young or old leaves.

What not to sample

- Diseased or dead plant material.
- Plant tissue damaged by insects and mechanical equipment.
- Plant tissue, which has been stressed by excesses of cold, heat, or moisture.
- Seeds should not be sampled—they do not reflect nutritional status of the whole plant.

How to Sample

Field crops

<i>Stage of growth</i>	<i>Plant part to sample</i>	<i>Number of plants to sample</i>
Corn		
Seedling stage (less than 12") or Prior to tasselling	All the above ground portion.	20-30
or From tasselling and shooting to silking	The entire leaf fully developed below the whorl. The entire leaf at the ear node (or immediately above or below it).	15-25 15-25
Sampling after silking occurs is not recommended.		

Soybeans or other beans

Seedling stage (less than 12") or Prior to or during initial flowering	All the above ground portion. Two or three fully developed leaves at the top of the plant.	20-30 20-30
Sampling after pods begin to set is not recommended.		

Tobacco

Before bloom	Uppermost fully developed leaf.	8-12
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Hay, pasture, or forage grasses

Prior to seed head emergence or at the optimum stage for best quality forage.	The 4 uppermost leaf blades.	40-50
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Alfalfa

Prior to or at 1/10 bloom stage	Mature leaf blades taken about 1/3 of the way down the plant.	40-50
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Clover and other legumes

Prior to bloom	Mature leaf blades taken about 1/3 of the way down from top of the plant.	40-50
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Small grains

Seedling stage (less than 12")	All the above ground portion.	50-100
or		
Prior to heading	The 4 uppermost leaves.	40-50
Sampling after heading	not recommended.	

Sorghum-milo

Prior to or at heading	Second leaf from top of plant.	15-25
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Vegetable crops

Stage of growth	Plant part to sample	Number of plants to sample
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Tomatoes, peppers, eggplant (field)

Prior to or during early bloom stage	Third or fourth leaf from growing tip.	15-20
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Sweet corn

Prior to tasselling	The first entire fully mature leaf below the whorl.	10-15
At tasselling	The entire leaf at the ear node.	

Beans (snap, lima, dry)

Prior to or during initial flowering	First or second trifoliolate leaf.	20
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Peas

Prior to or during initial flowering	Entire plant (no roots).	10-20
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Greenhouse tomatoes

Young plants	Entire mature leaf at first, second or third flower cluster.	6-8
Older plants	Entire mature leaf at fourth to sixth flower cluster.	6-8

Greenhouse lettuce

Young plants up to 4 weeks	Entire plant (no roots).	12
Older plants	One old leaf	10

Celery

Mid-growth	Petiole (stalk) of youngest mature leaf.	20
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Potatoes

30 to 45 days after emergence	Third to fifth leaf (petiole and leaflets) from growing tip	20-30
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Beets, carrots, parsnip, turnip, radish

Prior to root enlargement	Entire plant (No roots).	20
After root enlargement	Entire plant, with roots.	15

Cabbage, cauliflower, broccoli, brussels sprouts

Prior to heading	Youngest mature leaf.	10-15
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Cucumber, muskmelon, pumpkin, squash, watermelon

Early stages of growth	Newest expanded leaf.	15-20
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Collards, kale, mustard, spinach

Mid-growth	Youngest mature leaf.	15-20
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Ornamentals and flowers

Stage of growth	Plant part to sample	Number of plants to sample
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Ornamental trees

Current year's growth	Fully developed leaves	30-100
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Ornamental shrubs

Current year's growth	Fully developed leaves	30-100
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Turf

During normal growing season	Leaf blades. Clip by hand to avoid contamination with soil or other material.	½ pint of material
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Outdoor roses

During flower production	Upper leaves on the flowering stem.	20-30
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Chrysanthemums

Prior to or at flowering	Upper leaves on flowering stem.	20-30
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Outdoor carnations

(1) Unpinched plants	4 th or 5 th leaf pairs from base of plant.	20-30
(2) Pinched plants	5 th and 6 th leaf pairs from top of primary laterals.	20-30

Strawberries, brambles, and blueberries

Time to sample:

Blueberries (all types): Sample leaves during the first week of harvest.

Strawberries: Sample the first fully expanded leaves after renovation, about July 15 to August 1.

Brambles (all raspberries, blackberries, and dewberries): Sample leaves on nonfruiting canes between August 1 and 20.

Number of leaves:

A minimum of 40 leaves for blueberries and strawberries or 60 leaves for brambles should be selected for each analysis. All leaves within each kit should be from the same cultivar, although they should be taken from several plants.

Handling Samples:

Detach leaves and remove the petioles. Place leaves in the paper bag provided with each kit.

Note: In the unusual situation where you suspect that very local soil conditions are causing localized nutrient deficiencies or toxicities (such as in eroded limestone soils where pH can be highly variable within a small area) sample the plants from the suspected area independently, and use an additional kit to sample leaves from healthier plants.

Fruit trees

Select shoots that make a vertical angle of 45 to 60 degrees to the ground.

Select shoots at eye-level from around the outside of trees.

Remove one or two leaves from the mid-portion of new shoot growth.

Remove a total of 50 leaves for each sample. No more than 10 trees should be used for a sample.

If two or more trees are used per sample, they should represent a cross section of the variety for the area.

Grape vines

Remove 50 to 75 first fully-expanded leaves. Use latter number for varieties which have small leaf stems (petioles). Samples should be taken from fruiting shoots located halfway between the ground and highest trellis wire.

After removing leaves from vines, separate petioles from leaf blades. Send only petioles for analysis.

For routine analyses, samples must be taken at bloom, or at veraison, at least 70 days after full bloom, as these are the only times of year when nutrient levels in the plant are relatively stable. If samples taken at other times of the year are submitted, faulty interpretations could result due to incorrect sampling technique.

Floriculture crops

Greenhouse roses

Select a flowering shoot where buds are from size of a pea up to a size where petals are beginning to show color. Remove the entire first and second five-leaflet leaves, counting from top of shoot. For each sample use only healthy leaves of one variety from one area. Take 36 five-leaflet leaves per sample, using as many shoots as needed.

Greenhouse carnations

When carnations are benched in May or June, take the first samples in August, preferably during the second week. Following the August sampling, succeeding samples may be taken every two months. When special problems arise sample immediately.

Collect all samples between 8 a.m. and noon.

Plants just benched and not pinched. Take entire fourth and fifth leaf pairs, counting up from the base of stem. Collect 30 pairs of leaves for each sample.

Pinched plants. Until first lateral shoots develop at least seven pairs of leaves, sampling should be done as with unpinched plants. First or primary lateral shoots develop seven leaf pairs; sample the fifth and sixth leaf pairs from terminal end. Sampling may be continued on the first lateral shoots until flower buds become apparent.

After budding begins, samples should be shifted to secondary lateral shoots—again using fifth and sixth leaf pairs from terminal end of shoot.

When secondary lateral shoots develop flower buds, sampling should be shifted to the next group of developing lateral shoots. Continue this procedure throughout life of crop.

Do not sample from shoot with flower buds larger than one-eighth inch in size.

All other floricultural crops

For floriculture crops not discussed in this publication sample leaves taken from mid-portion or upper third of newly extending shoots. Always select fully expanded leaves for these samples.

Remove the entire leaf. Take minimum of 40 leaves per sample.

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