

Agri Analysis Inc.

Instructions for Taking Samples for Plant Analysis

Read these instructions carefully

Taking a Sample

Use the instructions in this publication to obtain samples which accurately reflect nutritional status of the crop submitted for analysis. Results of the analysis will determine whether problems in growth responses are due to a nutritional problem. Plant analysis can also be used to monitor and maintain appropriate growth patterns.

Completing the Plant Analysis Request Form

For every leaf, petiole or fruit sample sent to the Laboratory for analysis there must be an accompanied request form. The request form is designed to provide a direct communication between the laboratory and the crop specialist who will interpret the results. *Be sure to complete this form.* Please provide sufficient information for invoicing purposes and always list crop details- growth stage and plant part sampled.

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.

What not to Sample

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

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How To Sample

Vegetables

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Asparagus <i>Asparagus officinalis</i>		
Mid-summer	Top 15 cm of fronds	10
Late-summer	Top 50 cm of fronds	10
Beets <i>Beta vulgaris</i>		
Summer	Mature leaves of new growth	20
Broccoli <i>Brassica oleracea</i> var. <i>italica</i>		
Heading	Mature leaves of new growth	12
Common Cabbage <i>Brassica oleracea</i> var. <i>capitata</i>		
2 - 6 weeks old	Whole tops	15
2 - 3 months old	Wrapper leaves	12
Mature plants	Wrapper leaves	12
Mature plants	Midribs of wrapper leaves	15
Chinese or Celery Cabbage <i>Brassica rapa</i> var. <i>pekinensis</i>		
Mature plants	Mature leaves of new growth	12

How To Sample

Vegetables

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Carrots <i>Daucus carota ssp. sativus</i>		
Middle of growing season	Mature leaves of new growth	15
Mature plants	Oldest leaves	15
Cauliflower <i>Brassica oleracea var. botrytis</i>		
At heading	Mature leaves of new growth	12
Celery <i>Apium graveolens var. dulce</i>		
6 week old plants	Petioles of most recent fully developed leaves	12
Mature plants, non-flowering	Mature leaves of new growth	12
Collards <i>Brassica oleracea var. acephala</i>		
Middle of growing season	Mature leaves of new growth	12
Cucumber <i>Cucumis sativus</i>		
Bud to small fruit	5th leaf blade from tip	12
Small fruit to harvest	5th leaf blade from tip	12
Eggplant <i>Solanum melongene</i>		
Bud to small fruit	Most recent fully developed leaves	12

How To Sample

Vegetables

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Endive or Escarole <i>Cichorium endiva</i>		
8 Leaf stage	Oldest leaves	10
Kale <i>Brassica oleracea var. acephala</i>		
Middle of growing season	Mature leaves of new growth	12
Lettuce <i>Lactuca sativa var. capitata</i> Boston/Butterhead Lettuce		
8 leaf stage	Oldest leaves	12
Mature plants	Fully expanded leaves	12
<i>Lactuca sativa var. capitata</i> Greenhouse Lettuce (Boston/Butterhead)		
Mature plants prior to heading	Mature leaves of new growth	12
<i>Lactuca sativa var. capitata</i> Head/Iceburg Lettuce		
Mature plants	Wrapper leaves	12
Heading	Leaves of mature head	12
<i>Lactuca sativa var. longifolia</i> Cos/Romaine Lettuce		
Mature plants	Wrapper leaves	12
Onion <i>Allium cepa</i>		
1/3 to 1/2 maturity	Whole tops (green portion only)	12
1/2 grown to maturity	Whole top (green portion only)	12

How To Sample

Vegetables

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Peas (Garden or English Peas) <i>Pisum sativa ssp. Sativum</i>		
First bloom	Most recent fully developed leaflets	50
Peppers (Bell, Sweet Or Green) <i>Capsicum annuum</i>		
First bloom to fruit fill, young plants	Most recent fully developed leaves	25
Producing abundant fruit	Mature leaves of new growth	25
Potatoes <i>Solanum tuberosum</i>		
30 cm tall	Most recent fully developed leaves	25
Tubers ½ grown	Most recent fully developed leaves	25
Pumpkin <i>Cucurbita pepo</i>		
Summer	Mature leaves of new growth	12

Radish <i>Rhapanus sativas</i>		
Middle of growing season	Most recent fully developed leaves	30
Rhubarb <i>Rheum rhabarbarum</i>		
Summer	Blades of fully expanded leaves	20
Snap, Green String, Kidney Or French Bean <i>Phaseolus vulgaris</i>		
Summer	Uppermost recent fully-developed trifoliate leaves	10
Spinach <i>Spinacea oleracea</i>		
30-50 days old	Most recent fully developed leaves	15
Mature plants	Most recent fully developed leaves	15
Mature plants, non-flowering	Mature leaves of new growth	**** Production Greenhouse 15
Squash <i>Cucurbita pepo var. melopepo</i>		
Summer	Blades of most recent developed leaves	12

How To Sample

Vegetables

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Sweet Corn		
<i>Zea mays ssp. Mays</i>		
30-50 cm tall	Unfurled leaves, 5th from tip	8
5-6 weeks old, 50-70 cm tall	Unfurled leaves, 5th from tip	8
7-8 weeks, tassel start	Unfurled leaves, 5th from tip	8
Full tassel to silk start	Unfurled leaves, 5th from tip	8
End of silk	Unfurled leaves, 5th from tip	8
Sweet Potatoe		
<i>Ipomoea batatas</i>		
1st half of growing season	Most recent fully developed leaves	15
Tomato		
<i>Lycopersicon lycopersicum</i>		
Field Grown		
Mid-bloom	Compound leaves adjacent to top inflorescences	15
Greenhouse Grown		
Mature plants, non-fruiting	Mature leaves of new growth	25

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Tomato Cont.		
Production Fields	Trellis Type	
Mid-bloom, 1st cluster	Petioles opposite or below top flower cluster	12
Mid-bloom, 2nd cluster	Petioles opposite or below top flower cluster	12
Mid-bloom, 3rd cluster	Petioles opposite or below top flower cluster	12
Mid-bloom, 4th cluster	Petioles opposite or below top flower cluster	12
Mid-bloom, 5th cluster	Petioles opposite or below top flower cluster	12
Mid-bloom, 6th cluster	Petioles opposite or below top flower cluster	12
Zucchini		
<i>Cucurbita pepo var. melopepo</i>		
Mature plants, non-fruiting	Mature leaves of new growth	12

How To Sample

Field Crops

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Alfalfa or Lucerne <i>Medicago sativa</i>		
Prior to flowering	12 tops-Six inches of new growth	12
Barley <i>Hordeum vulgare</i>		
Prior to Heading	Top of plant	25
Corn <i>Zea mays</i>		
Less than 12"	Whole tops	15
Prior to tasseling	Leaves below the whorl	12
Initial silk	Ear leaves	12
Cotton <i>Gossypium hirsutum</i>		
First squares to initial bloom	Vegetative stems	25
Full bloom	Vegetative stems	25
Oats <i>Avena sativa</i>		
Prior to Heading	Whole tops	25
Rye <i>Secale cereale</i>		
Panicle initiation	Whole tops	25

How To Sample

Field Crops

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Sorghum		
<i>Sorghum bicolor</i>		
Seedling <30 cm tall (23-39 days old)	Whole tops	25
37-56 days old	Mature leaves of new growth	25
Blooming stage, visible heads	3rd leaf below head	25
Grain, dough condition	3rd leaf below head	25
Soybeans <i>Glycine max</i>		
Prior to pod set	Mature leaves of new growth	25
Timothy <i>Phleum pratense</i>		
Early anthesis	Whole tops	25
Tobacco <i>Nicotiana tabacum</i>		
30-45 days after planting	Mature leaves of new growth	15
45-60 days after planting	Mature leaves of new growth	15
60-80 days after planting	Mature leaves of new growth	15
80-100 days after planting	Mature leaves of new growth	15
Bloom stage	Mature leaves of new growth	15

How To Sample Field Crops

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Wheat <i>Triticum aestivum</i>		
Stage 1, one shoot	Whole tops	25
Stage 2, tillering begins	Whole tops	25
Stage 3, tillers formed	Whole tops	25
Stage 4, leaf sheaths lengthen	Whole tops	25
Stage 5, leaf sheaths strongly erected	Whole tops	25
Stage 6, first node of stem visible	Whole tops	25
Stage 7, Second node of stem visible	Whole tops	25
Stage 8, last leaf just visible	Whole tops	25
Stage 9, ligule of last leaf just visible	Whole tops	25
Stage 10, in "boot"	Whole tops	25
Stage 10, Flag only	Whole tops	25

How To Sample Field Crops

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Orchard Grass <i>Dactylis glomerata</i>		
3-4 weeks between clippings	Whole tops	15
Red Clover <i>Trifolium pratense</i>		
Prior to flowering	Whole Tops	15
White Clover <i>Trifolium repens f. lodigense</i>		
Prior to flowering	Mature leaves	50

How To Sample Fruits, Berries, Grapes

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Apple Leaves <i>Malus domestica</i>		
Summer	New growth leaves	50
Blueberry (all types) <i>Vaccinium ashei, corymbosum</i>		
Summer	Mature leaves of new growth	75
Cantelope/Muskmelon/Persian Melon <i>Cucumis melo Cantaloupensis</i>		
Flower start to small fruit	5th leaf from tip, unfurled	12
Small fruit to harvest	5th leaf from tip, unfurled	12
Cherry Tree sweet or sour <i>Prunus avium/cerasus</i>		
Summer	Mature leaves of new growth	50
Cranberry <i>Vaccinium macrocarpon</i>		
Summer	Mature leaves of new growth	75
Grape <i>Vitis labrusca</i> American Table Grapes		
Full bloom	Petioles opposite basal flower clusters	50
<i>Vitis rotundifolia</i> Muscadine		
Mid to late summer	Whole leaves opposite bunch cluster	15

<i>Vitis vinifera</i> Wine or European Table Grape		
Early summer	Whole leaves opposite bunch cluster	15
Full Bloom	Petioles opposite basal flower clusters	50
Peaches or Nectarines <i>prunus persica</i>		
Summer	Mature leaves-new growth	25
Pear <i>Pyrus communis</i>		
Summer	Mature leaves-new growth	50
Plum <i>Prunus domestica</i> cultivar		
Summer	Mature leaves-new growth	25
Raspberries <i>Rubus idaeus</i>		
2-3 wks post-harvest	Mature leaves of mid-section of non fruiting canes	50
Strawberries <i>Fragaria x ananassa</i>		
Prior to flowering	Most recent fully expanded leaves	25
Watermelon <i>Citrullus lanatus</i>		
Flower start to small fruit	Unfurled leaves, 5th from tip	12
Mature plants, small fruit stage	Mature leaves of new growth	12
Small fruit to harvest	Unfurled leaves, 5th from tip	12

How To Sample Woody Ornamentals and Flowers

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Celosia Cockscomb/Crested <i>Celosia argentea</i>		
Mature plants (36 cell packs)	Mature leaves of new growth	50
Daylilies <i>Hemerocallis fulva</i>		
Summer	Mature leaves of new growth	20
Delphinium <i>Delphinium x Pacific hybrids</i>		
Summer	Mature leaves of new growth	20
Geranium <i>Pelargoium x hortorum</i>		
Mature plants	Mature leaves of new growth	40
Gladiolus <i>Gladiolus callianthus</i>		
Summer	Mature leaves of new growth	25
Hibiscus <i>Hibiscus rosa-sinensis</i>		
Summer	Mature leaves of new growth	20
Kalmia (Mountain Laurel) <i>Kalmia latifolia</i>		
Summer	Mature leaves of new growth	25

Oenothera (evening primrose) <i>Oenothera speciosa</i>		
Summer	Mature leaves of new growth	40
Oriental Arborvitea <i>Platyclusus orientalis</i>		
Summer	2-3" terminal cuttings	25
Petunia <i>Petunia x hybrida</i>		
Mature plants	Mature leaves of new growth	50
Japanese Pieris or Andromeda <i>Pieris japonica</i>		
Summer	2-3" terminal cuttings	20
Rhododendron <i>Rhododendron catawbiense</i>		
Summer	Mature leaves of new growth	20
American or Eastern Arborvitae <i>Thuja occidentalis</i>		
Summer	2-3" terminal cuttings	25
Viburnum <i>Viburnum cassinoides</i>		
Summer	Mature leaves of new growth	25
Zinnia <i>Zinnia elegans</i>		
Mature plants	Mature leaves of new growth	40

How To Sample Landscape Trees

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Douglas Fir <i>Pseudotsuga menziesii</i>		
Late summer to fall	2-3" terminal cuttings	25
Eastern White Pine <i>Pinus Strobus</i>		
Summer	Terminal cuttings (needles)	20
Red Sunset Maple <i>Acer rubrum</i>		
Summer	Mature leaves of new growth	25
Sugar Maple <i>Acer saccharum</i>		
Summer	Mature leaves of new growth	20
Tulip Poplar <i>Liriodendron tulipifera</i>		
Summer	Mature leaves of new growth	20

How To Sample Ground Covers and Grasses

Stage of growth	Plant part to sample	Number of leaves/petioles to sample
Kentucky Bluegrass <i>Poa pratensis</i>		
Summer	Clippings from new growth	2 cups