
NC COOPERATIVE EXTENSION
Tissue Testing Field Kit
Supplies Needed:
- Sample Forms
- Marker or Pen
- Soil Boxes
- Paper Bags
- Shears or Knife

Table of Contents

Important Contact Information

Soil Science:

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Other Contacts:

NCDA&CS Agronomic Services (Plant or Soil Lab):
(919)733-2655

DEQ - Division of Water Resources, Animal Feeding Operations:

Ramesh Ravella - Program Supervisor
(919)707-3702

Christine Lawson - Program Engineer
(919)232-122

Form AD-2 (August 2013)

DIAGNOSTIC SOIL SAMPLE INFORMATION

— N.C. Soil Only —

PROBLEM SAMPLES

April–November: no fee
December–March: $4 / sample

NCDA&CS Agronomic Division Soil Testing Section
Mailing Address: 1040 Mail Service Center, Raleigh NC 27699-1040
Physical Address (UPS/FedEx): 4300 Reedy Creek Road, Raleigh NC 27607
Phone: (919) 733-2655 Website: www.ncagr.gov/agronomi

SAMPLE INFORMATION

FARM ID ***(optional)***

SAMPLE DATE ***(optional)***

COUNTY ***(where collected)***

NUMBER OF SAMPLES

PAYMENT

FEE TOTAL _____

METHOD OF PAYMENT
ESCROW ACCOUNT ONLY
(write account name below)

_____

To pay w/ credit card, you must use online sample submission.

Reminders

Fill out back of form.

Do not ship w/routine samples.

Write PROBLEM SAMPLES on outside of shipping box.

GROWER INFORMATION *(please print)*

LAST NAME FIRST NAME

ADDRESS **(in N.C. where samples were collected)**

CITY STATE ZIP
NC

PHONE
(__ __ __) __ __ __ – __ __ __ __

E-MAIL ADDRESS ☐ **Do Not** notify me when report is available.

CONSULTANT/OTHER RECIPIENT

LAST NAME FIRST NAME

ADDRESS

CITY STATE ZIP

PHONE
(__ __ __) __ __ __ – __ __ __ __

E-MAIL ADDRESS ☐ **Do Not** notify me when report is available.

LAB NUMBER (Leave blank)	SAMPLE IDENTIFICATION	LIME APPLIED WITHIN PAST 12 MONTHS Tons/Acre	Month	Year	PROBLEM CROP	NEXT CROP	CORRESPONDING SAMPLE IDS Plant Tissue	Nematode Assay	CROP CONDITION (check one) Poor	Fair	Good	DROUGHT STRESS Yes	No
1													
2													
3													
4													
5													
6													
7													
8													

By submitting this form to the NCDA&CS Agronomic Division, I attest that the accompanying samples were collected in North Carolina.

Diagnostic (problem) analysis requires that all relevant information requested on the front and back of this form be provided. If details regarding the problem are not provided, a predictive (routine) analysis will be conducted.

Thank you for using agronomic services to manage nutrients and safeguard environmental quality. — Steve Troxler, Commissioner of Agriculture

If signs or symptoms of insects or diseases are present, contact your Cooperative Extension office for information about collecting, preparing and shipping plant and insect specimens to the PLANT DISEASE & INSECT CLINIC, 100 Derieux Place, 1227 Gardner Hall, Campus Box 7211, North Carolina State University, Raleigh, NC 27695-7211. Phone 919-515-3619 about disease problems and 919-515-9530 about insect-related problems.

VISUAL SYMPTOMS of ABNORMAL PLANTS

Growth

General: Good _____ Fair_____ Poor _____ Dead_____

Specific: Brittle leaves/stems _____ Distorted leaves_____ Leaf rosette _____ Dwarfed_____

Roots: Good _____ Fair_____ Poor _____ Dead_____ If legumes, nodulated? Yes _____ No ____

Bud / New Growth: Good_____ Fair_____ Dead_____ Distorted_____

Color

Color Location: Younger leaves_____ Older leaves_____ Whole plant _____

Color of Leaves: Dark green _____ Light green_____ Yellow _____ Red ____ Reddish purple_____

Leaf Color Pattern: Whole leaf _____ Between veins_____ Veins & petiole _____ Margins_____ Tip _____ Spotted _____

Other pattern (describe) _____

CROP PRODUCTION INFORMATION

Method of Application	Fertilizer Applied to This Crop (lb/acre)							
	N	P_2O_5	K_2O	S	Mn	Zn	Cu	B
Broadcast								
Row / Band								
Topdress / Foliar								

Date of Planting _____

Was the previous crop affected?

Yes _____ No _____

Other Nutrient Materials (gypsum, sewage sludge, sawdust, etc.) _____

Crop Tillage: Conventional _____ No-till _____ Minimum Tillage _____

Field / Growing Conditions: Normal _____ Wet_____ Dry _____ Hot _____

Greenhouse Media Type: Peat-lite _____ Pine Bark _____ Sandy Loam_____ Silt-Clay Loam _____

COMMENTS — Please provide any other pertinent information, including whether or not you submitted matching samples to the NCSU Plant Disease & Insect Clinic.

Form AD-4 (2017)

PLANT SAMPLE INFORMATION

SAMPLE TYPE (Circle ONE)

Predictive ($5) ☐ Diagnostic ($5) ☐
Research ($12) ☐ Out of State ($25) ☐

NCDA&CS Agronomic Division Plant/Waste/Solution/Media Section
Mailing Address: 1040 Mail Service Center, Raleigh NC 27699-1040
Physical Address (UPS/FedEx/DHS): 4300 Reedy Creek Rd, Raleigh NC 27607
Phone: (919) 733-2655 **For lab results go to: www.ncagr.gov/agronomi**

OFFICE USE ONLY
REPORT #
DATE REC'D
INITIAL

SAMPLE INFORMATION

FARM ID

SAMPLING DATE

SAMPLED BY
□ Grower □ Reg. Agronomist
□ Advisor □ Ext. Agent

COUNTY *(WHERE COLLECTED)*

NUMBER OF SAMPLES

PAYMENT

FEE TOTAL $_____
AMT PAID $_____
METHOD OF PAYMENT:
☐ CASH /CHECK
☐ INVOICE
◯ Grower
◯ Advisor/Consultant
⊙ _____
☐ ESCROW ACCOUNT:
(provide Account Name or Number)
_____
Reports will appear as "Pay Now" until Payment is applied

GROWER INFORMATION *(please write legibly)*

LAST NAME FIRST NAME
ADDRESS
CITY STATE ZIP
EMAIL ADDRESS
PHONE (_____) _____ **PALS #** ***(If known)***

CONSULTANT / EXTENSION AGENT / OTHER

LAST NAME FIRST NAME
ADDRESS
CITY STATE ZIP
EMAIL ADDRESS
PHONE (_____) _____ **PALS #** ***(If known)***

LAB NUMBER *(LEAVE BLANK)*	**SAMPLE ID**	**CROP NAME**	**GROWTH STAGE**	**WEEK**	**PLANT PART** *(M, W, T, E, H, P)*	**PLANT POSITION** *(Harvest tobacco only)*	**PLANT APPEARANCE**	**CORRESPONDING SAMPLE ID** ☐ **Soil** ☐ **Waste** ☐ **Media** ☐ **Nematode** ☐ **Solution**	**SPECIALTESTS** ($2 EACH) **Mo**	**Cl**	**NO_3**

GROWING CONDITIONS (*CHECK ALL THAT APPLY*)

Planting date:_____ Date of last soil test:_____

Rainfall □ Below normal □ Normal □ Above normal □ Drip Irrigation
Temperature □ Below normal □ Normal □ Above normal
Production System □ Greenhouse □ Field □ High Tunnel □ Outdoor Container
Nutrient supply □ Granular fertilizer □ Liquid fertilizer □ CRF □ Organic
Growth substrate □ Soil □ Potting Media □ Hydroponic solution □ Other_____

SAMPLE COMMENTS

Please provide information to aid in recommendations or diagnosis, such as fertilizer history, disease or insect presence, symptomology, etc.

_____
_____
_____
_____
_____
_____

Thank you for using agronomic services to manage nutrients and safeguard environmental quality. — Steve Troxler, Commissioner of Agriculture

INSTRUCTIONS FOR COMPLETING THE PLANT SAMPLE INFORMATION FORM

TIPS:

- **Send leaf tissue samples in PAPER bags. Do NOT use plastic bags.**
- **Be sure to send enough leaf material. A general rule of thumb is two handfuls of leaves.**
- **Do not send whole plants with roots. Submit leaves from multiple plants from a representative area.**

SAMPLE TYPE

Predictive (routine) analysis checks nutrient content and provides interpretation and general recommendations.

Diagnostic (troubleshooting) analysis identifies nutritional problems and provides interpretation and specific recommendations. Diagnostic analysis is most effective if the grower submits both a "good" (healthy) and a "bad" (unhealthy) sample.

Research is for samples submitted by private and university research facilities. An approved research agreement is required prior to submission.

Out of state is for samples submitted by or for non-North Carolina residents.

SAMPLE INFORMATION: FARM ID is an optional identifier associated with each sample. Please also specify the sampling date, who collected the sample, and the county where it was collected.

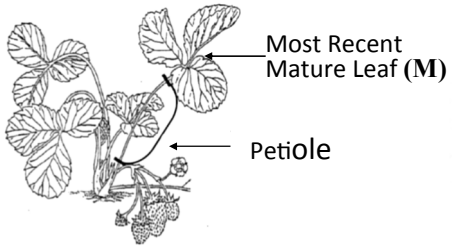
SAMPLE ID: Provide sample identification (no more than six letters). Put the same ID on the sample envelope or paper bag.

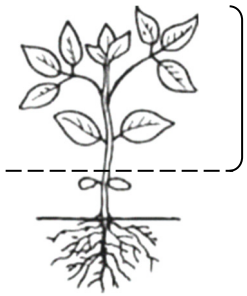
PAYMENT INFORMATION: Cost per sample is $5 for N.C. residents, $25 for out of state samples, and $12 for in-state research samples. **Reports are not released until fees are paid**. Special tests—petiole nitrate nitrogen, molybdenum (Mo) and chloride (Cl)—are an additional $2. A petiole nitrate nitrogen test is required for cotton and strawberry samples and a molybdenum test is required for *Brassicas* (cabbage, kale, rapeseed, broccoli, Brussels sprouts, cauliflower, collards, turnips), spinach, alfalfa, and poinsettia. Payments can be made by cash, check, escrow or over the phone with a Visa or Mastercard. Beginning Jan. 2016, payments can be made online on the PALS site.

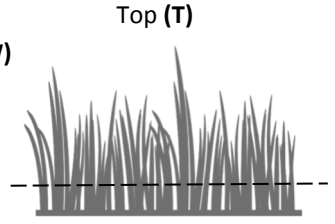
GROWTH STAGE: Identify plant growth stage using one of these letter codes: **S = SEEDLING, E = EARLY GROWTH, B = BLOOM, F = FRUITING, M = MATURE**

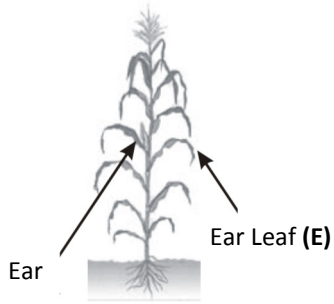
WEEK: For strawberry samples, list the number of weeks since the 1st week of bloom. For cotton samples, list the number of weeks the crop has been in early, bloom, or fruit stage. Providing the accurate week is essential for correct nitrogen recommendations. Separate petioles from leaves and submit both parts for strawberry and cotton samples.

PLANT PART: For the majority of crops, the **most recent mature leaf (M)** is the proper plant part to sample. For seedlings, sample the **whole plant (W)** cut 1" above the soil line. For grasses and grains prior to head formation, sample the **top three inches (T).** For corn at tasseling, sample the **ear leaf (E). H = Harvest leaf** (tobacco only). **P = Petiole only** (applies only to vinifera grapes).









PLANT POSITION: This field is only necessary for ***harvest stage tobacco*** leaves. For these leaf samples, specify whether the leaves were collected from the **(U) = Upper**, **(M) = Middle** or **(L) = Lower** position of the plant.

Form AD-5 (August. 2020)

SAMPLE TYPE

(Check one below)

Predictive/Diagnostic	NC ☐	$3 / Out-of-state ☐	$13
Pinewood/Research	NC ☐	$10 / Out-of-state ☐	$20
Mol. Diag. & Std. Assay	NC ☐	$23 / Out-of-state ☐	$33

NEMATODE PROBLEM-DIAGNOSIS INFORMATION

NCDA&CS Agronomic Division Nematode Assay Section
Mailing Address: 1040 Mail Service Center, Raleigh, NC 27699-1040
Physical Address (UPS/FedEx): 4300 Reedy Creek Road, Raleigh, NC 27607
Phone: (919) 733-2655 Web Address: www.ncagr.gov/agronomi

FOR OFFICE USE ONLY
REPORT #
DATE REC'D
INITIAL

SAMPLE INFORMATION

FARM ID

SAMPLED BY
☐ Grower ☐ NCDA&CS Agronomist
☐ Advisor ☐ Coop. Ext. Agent

SAMPLE DATE

COUNTY _____ (where collected)
STATE

NUMBER OF SAMPLES

PAYMENT

FEE TOTAL $_____

AMT PAID $ _____

METHOD OF PAYMENT
☐ CASH/CHECK
☐ INVOICE
◯ Grower
◯ Advisor/Consultant
◯ _____

☐ ESCROW ACCOUNT:
(provide Account Name or Number)

_____

"Reports will appear as "Pay Now" until Payment is applied"

GROWER INFORMATION (please print)

LAST NAME FIRST NAME

BUSINESS NAME

ADDRESS

CITY STATE ZIP

EMAIL ADDRESS

PHONE (_____) _____ **PALS # *(if known)***

CONSULTANT/OTHER RECIPIENT

LAST NAME FIRST NAME

BUSINESS NAME

ADDRESS

CITY STATE ZIP

EMAIL ADDRESS

PHONE (_____) _____ **PALS # *(if known)***

Serial #	LAB NUMBER (leave blank)	SAMPLE ID (5 characters only)	CURRENT CROP (include variety, if known)	CROP LAST YEAR (include variety, if known)	NEMACIDE APPLIED LAST YEAR	SOIL TYPE	PLANT APPEARANCE (check any that apply)				SYMPTOM DISTRIBUTION	
							Normal	Stunted	Yellow	Dead	Entire	Patches
1												
2												
3												
4												
5												
6												

Thank you for using agronomic services to manage nutrients and safegaurd environmental quality — Steve Troxler, Commissioner of Agriculture

TAKING SOIL SAMPLES FOR NEMATODE ASSAY

Reliable nematode assay test results depend on good sampling procedures. Follow these directions for collecting and handling samples.

WHEN TO SAMPLE

For *annual crops* (corn, peanut, soybean, tobacco, tomato, etc.), collect samples in late summer or early fall. Samples collected at this time provide more reliable information for predicting nematode development and crop response than those collected in the spring. For established *perennial plants* (ornamentals, turfgrasses, peach, etc.), soil samples can be collected throughout the year.

TAKING SAMPLES

Take samples only when the soil is in good condition: not too wet, not too dry, not frozen.

For annual crops

1. In each field to be sampled, take the sample from an area with common crop history.
2. If the soil is fairly uniform and the area to be sampled is four acres or less in size, one sample will suffice. If the field is larger than four acres but less than eight, divide the field into two blocks of approximately equal size and take one sample from each block. When fields are larger than eight acres, select four-acre blocks representing at least 50 percent of the field and take a sample from each block.
3. If soil type in the area to be sampled is variable (i.e., heavy clay soil in one portion and a sandy soil in the remainder), take a separate sample from each soil type.
4. Collect cores from the plowed layer of soil (four inches deep for no-till crops; eight inches deep for conventional crops) with a soil sampling tube (one-inch diameter core). Take at least 20 cores in a systematic pattern for each sample area (see diagram). Collect the cores in a plastic bucket, then mix thoroughly, and fill the plastic bag that comes with the nematode assay box. If you want a soil fertility analysis, you can submit the remaining soil along with a *Soil Sample Information* form to the Agronomic Division's soil testing laboratory.

For perennial crops

1. Send in separate soil samples for each crop or plant species.
2. Take soil from the root zone of declining plants. Do not sample directly around dead plants. Turfgrass samples should come from the edge of damaged areas and to a depth of 4 inches.
3. Soil samples should be collected and mixed as previously described for annual crops.

HANDLING SAMPLES

1. Place each soil sample for nematode assay in a plastic bag, *seal the bag tightly* to keep soil moist, and put it in a nematode assay sample box. Write the sample identification number in the space provided on each box. This number identifies your sample, and it must correspond to the number in the **SAMPLE ID** column on the *Nematode Assay Information* form.
2. *Protect samples from overheating and freezing. Do not place samples in direct sunlight, the trunk of a car, or a freezer.*
3. Record field history on the *Nematode Assay Information* form. This information, including the variety grown, is essential for accurate prediction of nematode hazard levels.
4. Send samples to the laboratory immediately.

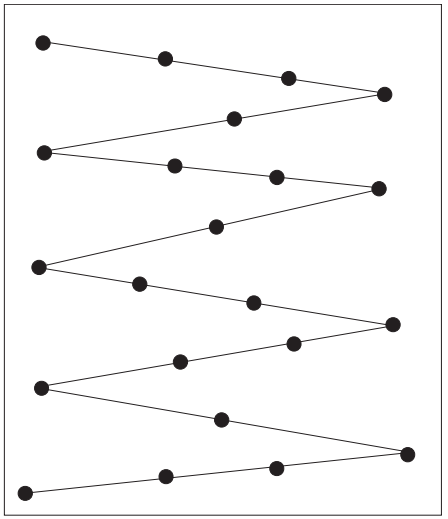


Diagram to follow when collecting samples

CAUTION: Populations of nematodes are not uniformly distributed. A good sample will come from a mixture of multiple soil cores collected randomly from an area with consistent soil type and planting history.

15,000 copies of this public document were printed at a cost of $621.22 or $0.04 per copy.

NC STATE UNIVERSITY

NC State Plant Disease and Insect Clinic

General Sample Submission Form*

Campus Box 7211
1227 Gardner Hall,100 Derieux Pl.
Raleigh, NC 27695-7211
https://pdic.ces.ncsu.edu/

*Online data entry (plantclinic.ces.ncsu.edu) is required for turfgrass disease diagnostics and encouraged for all submissions when possible.

Office use only:

Clinic # _____ Date Rec'd ___ / ___ / 20___

Amount: $ _____ Cash ☐ Check # _____ No charge ☐

Payment: Enclosed $ _____ *Make payable to "NCSU".*
or **Bill to:**

Client ☐ Consultant ☐ County ☐ Commodity fund ☐

Date sample collected: _____ /_____ / 20_____

Collector: Client ☐ Agent ☐ Consultant ☐ Other ☐

Plant/crop: _____ *Genus/species:* _____ Variety _____

Site (circle): Field crop Container nursery Field nursery Greenhouse Home grounds Commercial grounds Household Other _____

Client information (grower, homeowner, etc.) → Sample collected at this address? Yes ☐ No ☐ *(If "No" provide locality in comments.)*

Last name _____ First name _____ Company _____

Address _____ City _____ State _____ Zip _____ County _____

Email _____ (_____)_____ Phone (_____)_____ Cell

Other contact information (agent, consultant, PCO, NCDA&CS specialist, landscaper, etc.)

Last name _____ First name _____ Company _____

Address _____ City _____ State _____ Zip _____ County _____

Email _____ (_____)_____ Phone (_____)_____ Cell

% of planting affected: _____ **Problem:** Disease ☐ Insect ☐ Other ☐ **Control:** Commercial ☐ Non-commercial ☐ Organic ☐ None ☐

Distribution of symptoms: Widespread Random plants Strips Patches Single plant Other _____

Plant Symptoms and Signs (Check all that apply. *Note: needles = leaves.*)

- ☐ decay (□ root/tuber/bulb, □ crown, □ stem, □ fruit, □ leaf, □ seed)
- ☐ wilting (□ upper leaves, □ lower leaves, □ individual branches, □ whole plant)
- ☐ canker/dieback (□ twigs, □ branches, □ trunk)
- ☐ leaf spots (□ brown/tan, □ black/purple, □ yellow border, □ red border, □ tiny, □ small/medium, □ large blotches, □ upper leaves, □ lower leaves)
- ☐ yellowing (□ upper leaves, □ lower leaves, □ between veins)
- ☐ browning (□ whole leaves, □ leaf margins/tips, □ other _____)
- ☐ mosaic/mottle/color break (□ leaves, □ flowers, □ other _____)
- ☐ shedding (□ leaves, □ flowers, □ fruit, □ twigs)
- ☐ galls and other malformations (□ leaves, □ stems, □ roots, □ flowers/fruit)
- ☐ fungal structures: mushrooms, conks, or mold → *Where?* _____
- ☐ other (describe) _____

Pest Signs: (Check all that apply. *Note: needles are leaves.*)

- ☐ boring/tunneling/galleries in stems, trunks
- ☐ chewing/skeletonizing/holes on leaves
- ☐ mining leaves
- ☐ discoloration/stippling/patterns on leaves
- ☐ galls, curling or malformation of plant parts

Pest Structures:

- ☐ eggs/egg-bearing structures
- ☐ dry frass (pellets, sawdust, toothpicks, etc.)
- ☐ wet feces or fecal specks
- ☐ wax deposits
- ☐ webbing/silk
- ☐ other (describe) _____

Additional pest information: Where was the pest found? (plant part, room type, etc.) _____

What was the pest doing? _____ Degree of infestation (approx. # found) _____

Comments: (e.g. pesticides/fertilizers used, previous crops, planting or transplant date, site conditions, when issue was noticed, etc.)

(use back of form if additional space needed)

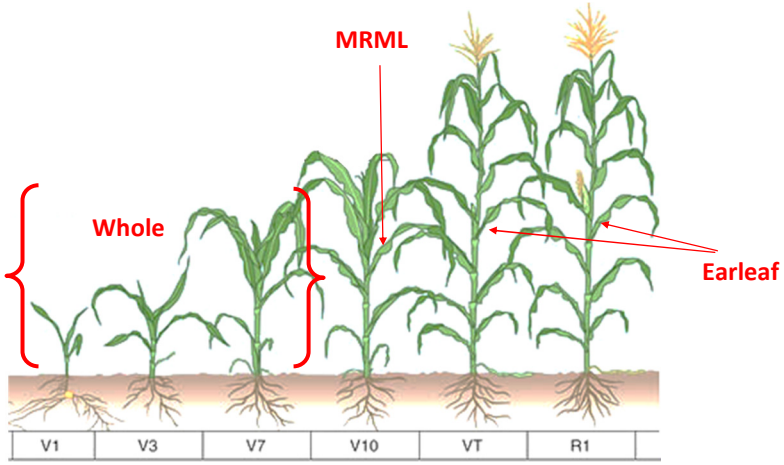
Plant Tissue Sampling for Corn

Tissue analysis is used to optimize corn fertility or troubleshoot nutritional problems.

Seedlings (< 4") and Early (< 12"): Cut the Whole plant 1" above soil. ~ 15-20 plants.

Early (> 12"; ~ V10): Collect the first Most Recent Mature Leaf (MRML) below the whorl with a collar. ~ 10-15 plants.

Tasseling (VT) through Silking (R1) : Leaf opposite and below the uppermost developing ear (Earleaf). Foliar testing after Silking is not recommended.



Tips

- Fill out the Plant Sample Information Form as completely as possible. The more information you provide, the more precise your recommendations will be.
- Specify the **growth stage** and whether your sample is **Predictive** (routine) or **Diagnostic** (troubleshooting). For diagnostic testing, submit a plant sample and a corresponding soil sample from both a "good" (healthy) and "bad" (unhealthy) area.
- Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.

Standard analysis includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, and boron.

Fees: $5 per sample for N.C. growers ($25 for out-of-state; $12 for N.C. researchers).

Turnaround time: 2 days from receipt.

Send samples to: NCDA&CS Agronomic Services—Plant Lab

Mailing address:
1040 Mail Service Center, Raleigh, NC 27699
Physical address:
4300 Reedy Creek Rd, Raleigh NC 27607
Phone: (919) 733-2655

For more detailed information, go to the Plant Tissue Analysis page at www.ncagr.gov /agronomi or contact the regional agronomist for your area.

Plant Tissue Sampling for Cotton

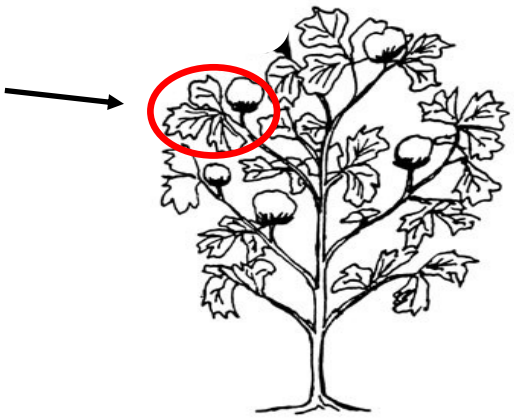
When to sample: Seedling (S) Four weeks following emergence of 2-3 true leaves.

Early (E): Four weeks following seedling stage, includes pinhead square formation.

Bloom (B): Begins when plants have at least 5 open blooms per 25 row feet.

Fruit (F): Begins 5th week after beginning of bloom

Part to collect: Collect 25-30 most recent mature leaves and petioles. **Separate petioles in the field and include with sample.**



Tips

Fill out the Plant Sample Information form as completely as possible.

Specify the **growth stage** and whether your sample is **Predictive** (routine) or **Diagnostic** (troubleshooting). For diagnostic testing submit a sample from both a "good" (healthy) and "bad" (unhealthy) area.

Tips: Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.

Standard analysis includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, aluminum and boron on the leaf and nitrate on the petiole.

Fees: $7 per sample for N.C. growers

($27 for out-of-state; $14 for N.C. researchers)

Turnaround time: 2 days from receipt

Send samples to: NCDA&CS Agronomic Services-Plant Lab

Mailing address:
1040 Mail Service Center, Raleigh, NC 27699
Physical address:
4300 Reedy Creek Rd, Raleigh NC 27607
Phone: (919) 733-2655

Plant Tissue Sampling for Floral Hemp

How: Collect 1-2 leaves from 10-20 plants. Recommended sampling time is from early vegetative growth up to flowering.

Specify Growth Stage: Seedling (S), Early (E), Bloom (B), or Mature (M).

Plant Part: Sample the most recently mature leaves (MRMLs), generally the 3rd to 5th leaf from the growing point.

www.shutterstock.com
Image ID: 513262714

Tips

- Fill out the plant sample information form as completely as possible. The more information you provide, the more precise your recommendations will be. **You MUST include your Industrial Hemp license # on the form.**
- For problem samples, submit a plant sample from both a "good" (healthy) and "bad" (unhealthy) area.
- Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.

Standard analysis includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, and boron.

Fees: $5 per sample for N.C. growers
($25 for out-of-state; $12 for N.C. researchers).

Turnaround time: 2 days from receipt.

Send samples to: NCDA&CS Agronomic Services-Plant Lab

Mailing address:
1040 Mail Service Center, Raleigh, NC 27699
Physical Address:
4300 Reedy Creek Rd, Raleigh, NC 27607
Phone: (919) 733 2655

For more detailed information, go to the Plant Tissue Analysis page at www.ncagr.gov/agronomi or contact the regional agronomist for your area.

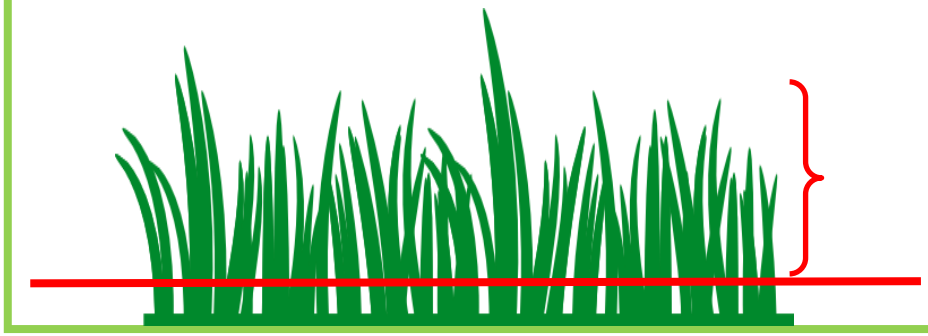
Plant Tissue Sampling for Forages

Important: The Plant Tissue Lab analyzes forages for monitoring crop fertility. Forage hay samples analyzed for animal nutrition should be sent to the Food & Drug Protection Division Animal Feed Program at: 4600 Reedy Creek Road, Raleigh, North Carolina 27607. Phone: 919-733-7366.

How: For seedlings (<6 " tall), collect entire top of plant, cut 1/2" above soil line. For early, cut the top 6 inches. Collect two handfuls or 20 tops.

Growth Stage: Seedling (S) Early (E)

Plant Part: Top (T)



Tips

- Fill out the plant sample information form as completely as possible.
- Specify the **growth stage** and whether your sample is **Predictive** (routine) or **Diagnostic** (troubleshooting). For diagnostic testing, submit a plant sample from both a "good" (healthy) and "bad" (unhealthy) area.
- Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.

Standard analysis includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, aluminum and boron.

Fees: $5 per sample for N.C. growers
($25 for out-of-state; $12 for N.C. researchers).

Turnaround time: 2 days from receipt.

Send samples to: NCDA&CS Agronomic Services-Plant Lab

Mailing address:
1040 Mail Service Center, Raleigh, NC 27699
Physical Address:
4300 Reedy Creek Rd, Raleigh, NC 27607
Phone: (919) 733 2655

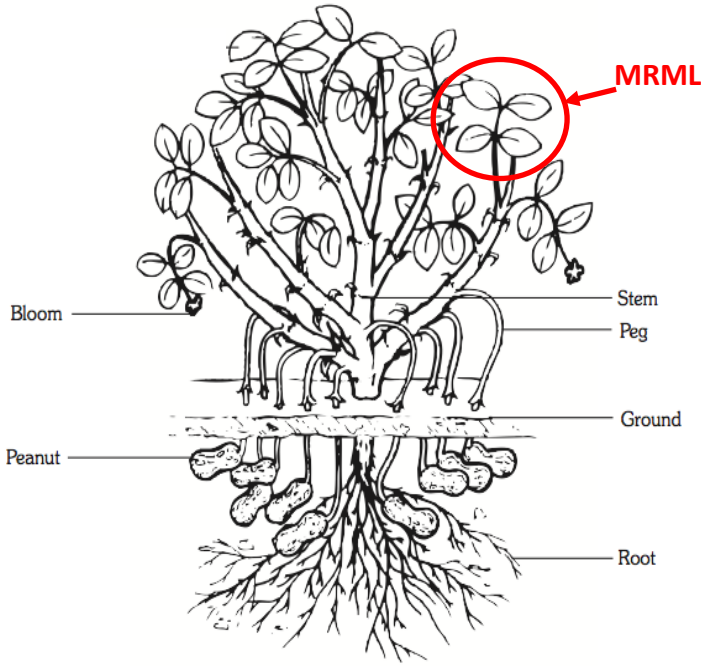
For more detailed information, go to the Plant Tissue Analysis page at www.ncagr.gov/agronomi or contact the regional agronomist for your area.

Plant Tissue Sampling for Peanut

When to sample: Prior to (E) or at bloom (B)

Plant part to collect: Most recently mature tetrafoliate leaf (MRML) which is about 3rd to 5th leaf from growing point

Collect: 25-30 leaves from 15-20 plants



Tips

Fill out the Plant Sample Information form as completely as possible.

Specify the **growth stage** and whether your sample is **Predictive** (routine) or **Diagnostic** (troubleshooting). For diagnostic testing submit a sample from both a "good" (healthy) and "bad" (unhealthy) area.

Tips: Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.

Standard analysis includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, aluminum and boron.

Fees: $5 per sample for N.C. growers

($25 for out-of-state; $12 for N.C. researchers)

Turnaround time: 2 days from receipt

Send samples to: NCDA&CS Agronomic Services-Plant Lab

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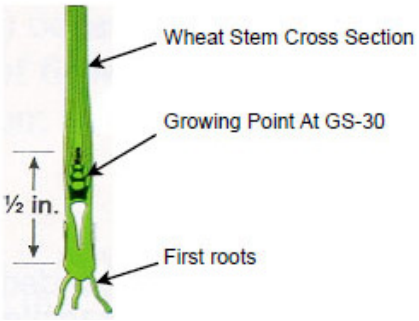
Plant Tissue Sampling for Wheat

Predictive (GS-30) sampling is used to determine mid-season N rates and evaluate overall nutritional status.

When to sample: Zadoks growth stage 30 (GS-30).

~ Feb. – March but correct growth stage is critical. When wheat begins to stand up tall and straight, pull several plants. Split the stems from the top to the base and look for the growing point. Before GS-30, it will be just above the roots. At GS-30, it will be about 1/2 inch up the stem.



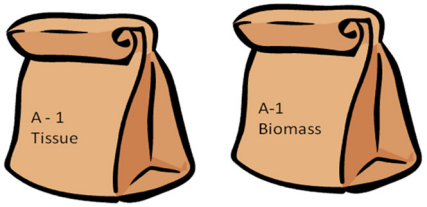
How: GS-30 sampling requires two types of samples: tissue and biomass.

Tissue: Cut plants about 1/2 inch above surface. Two large fistfuls of leaves will make a good sized sample.

Biomass: Collect all the above-ground plant tissue in 36" row section or, in broadcast fields, from one yard^2.

Tips

- Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.
- Submit your tissue and biomass samples in separate bags.



- For submitting **Diagnostic** (troubleshooting) samples outside of the GS-30 period, there is no need to submit a biomass sample.
- Fill out the Plant Sample Information form as completely as possible. The more information you provide, the more precise your recommendations will be.

Standard analysis includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, and boron.

Fees: $5 per sample for N.C. growers
($25 for out-of-state; $12 for N.C. researchers).

(no charge for biomass samples)

Send samples to: NCDA&CS Agronomic Services

Mailing address:
1040 Mail Service Center, Raleigh, NC 27699

Physical address:
4300 Reedy Creek Rd, Raleigh NC 27607
Phone: (919) 733-2655

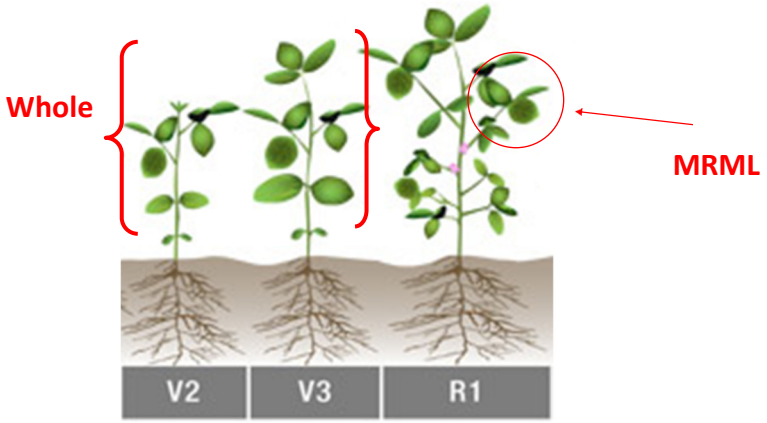
For more detailed information, visit the Plant Tissue Analysis page at www.ncagr.gov /agronomi or contact the regional agronomist for your county.

Plant Tissue Sampling for Soybean

Tissue analysis is used to optimize soybean fertility or troubleshoot nutritional problems from seedlings (V2) up to R2. Sampling after R4 is not recommended.

Seedlings (V2-V3): Cut the entire plant 1" above the soil line. Collect about 20 plants.

Early growth (>V3) through bloom (R1-R2): Collect the most recent mature trifoliate leaf (MRML) from ~20 plants. MRMLs are neither young and shiny nor old and dull and are about the 3rd to 5th leaf down from the top.



Fill out the Plant Sample Information form as completely as possible. The more information you provide, the more precise your recommendations will be.

Specify **growth stage** and whether your sample is **Predictive** (routine) or **Diagnostic** (troubleshooting). For diagnostic testing, submit a sample from both a "good" (healthy) and "bad" (unhealthy) area.

Tips: Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.

Turnaround time: 2 days from receipt

Standard analysis ($5 per sample) includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, aluminum and boron. Molybdenum test is available for an additional $2.

Send samples to: NCDA&CS Agronomic Division

Mailing address:
1040 Mail Service Center, Raleigh, NC 27699
Physical address:
4300 Reedy Creek Rd, Raleigh NC 27607
Phone: (919) 733-2655

For more detailed information, go to the Plant Tissue Analysis page at www.ncagr.gov /agronomi or contact the regional agronomist for your county.

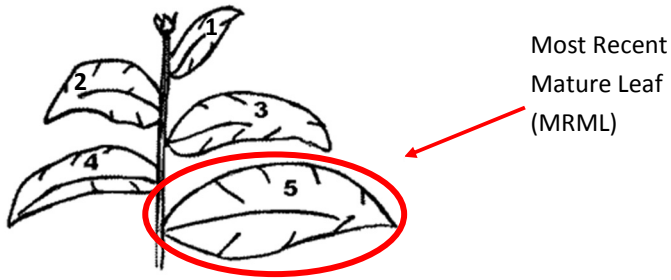
Plant Tissue Sampling for Tobacco

Tissue analysis is used to monitor tobacco fertility, troubleshoot nutritional problems or to measure leaf ripeness prior to harvest.

Seedlings (defined as < 12"): Collect the above-ground portion from 20-30 plants.

Early through Mature growth: Collect one Most Recent Mature leaf from ~ 12 plants. For routine monitoring, 1 week before layby is a good time to test.

Harvest ripeness test: Collect one MRML from the lower, middle or upper stalk position from 12 plants. Specify that the sample contains *harvestable* leaves (H) instead of *most recent mature leaves* and specify whether the plant position is Upper (U), Middle (M), or Lower (L).



Tips

- Fill out the Plant Sample Information Form as completely as possible. The more information you provide, the more precise your recommendations will be.
- Specify the **growth stage** and whether your sample is **Predictive** (routine) or **Diagnostic** (troubleshooting). For diagnostic testing, submit a plant sample and a corresponding soil sample from both a "good" (healthy) and "bad" (unhealthy) area.
- Use paper bags for storing and mailing. Don't put your leaves in a plastic bag. They will rot.

Standard analysis includes: nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, zinc, copper, and boron.

Fees: $5 per sample for N.C. growers
($25 for out-of-state; $12 for N.C. researchers).

Turnaround time: 2 days from receipt.

Send samples to: NCDA&CS Agronomic Services—Plant Lab

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