THE UNIVERSITY OF GEORGIA

COOPERATIVE EXTENSION

Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

FEE SCHEDULE

AGRICULTURAL AND ENVIRONMENTAL SERVICES LABORATORIES

ATHENS, GEORGIA

2009

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I. Introduction

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INTRODUCTION

This Fee Schedule Handbook is provided for use by County Extension Agents and County Extension Secretaries who are the principal source of samples submitted for analytical services offered by the Agricultural and Environmental Services Laboratories (AESL). Copies will be made available to Extension Specialists and others as requested on a limited basis.

The purpose of this Handbook is to give a schedule of fees for all analytical services normally available from the respective units along with pertinent sampling and submission instructions.

Two copies of this Handbook are provided to each County Extension Office for their use. Revision will be made periodically, and it is the responsibility of each holder of the Handbook to add the revised or new information and to delete out-dated material in a timely manner.

Please keep this reference in a central location within the office and follow the fee schedule and submission instructions closely in order to provide your clients with timely and accurate information.

How To Use This Handbook

Sections are provided for each major kind of samples we receive, i.e., soil, plant, feed, water, animal waste, etc. Once you have determined the kind of sample, go to that section to find a listing of the tests normally conducted. You will also find the fee, special sampling instructions and the laboratory unit responsible for the test. Addresses for each laboratory are given in the section labeled "General Laboratory Information." There are also examples of all current submission forms that should be on hand in your office files and /or available on the AESL Web site: http://aesl.ces.uga.edu .

By following the guidelines given in this Handbook, the task of handling samples of all types should be easier for you, and the availability of test reports will be expedited for your county constituents.

If you have questions or comments, please contact me or any of the appropriate personnel listed in the General laboratory Information section.

David E. Kissel
Professor and Director
Agricultural and Environmental Services Laboratories
Ph: 706-542-5350; Fax: 706-369-5734
e-mail: dkissel@uga.edu

II. General Laboratory Information

II

GENERAL LABORATORY INFORMATION

A. Mailing Addresses

Abbreviations	Laboratory Name and Address
AESL	Agricultural and Environmental Services Laboratories 2400 College Station Road Athens, Georgia 30602-9105 phone: (706)542-5350 fax: (706)369-5734
SPW	Soil, Plant, and Water Laboratory 2400 College Station Road Athens, Georgia 30602-9105 phone: (706)542-5350 fax: (706)369-5734
FEW	Feed and Environmental Water Laboratory 2300 College Station Road Athens, Georgia 30602-4356 phone: (706)542-7690 fax: (706)542-1474
PHW	Pesticide and Hazardous Waste Laboratory 2300 College Station Road Athens, Georgia 30602-4356 phone: (706)542-9023 fax: (706)542-1474
TLA	Trace Level Analysis Laboratory 2300 College Station Road Athens, Georgia 30602-4356 phone: (706)542-9023 fax: (706)542-1474

B. Laboratory Services and Personnel

1. **Soil, Plant and Water Laboratory** (**SPW**)
   2400 College Station Road, Athens, Georgia 30602-9105
   phone: (706) 542-5350; Fax: (706) 369-5734

   This facility provides numerous analyses for soil, plants, water, animal waste, sludge and cotton petioles. Submission forms (see submission form section) are provided for the various types of samples to be submitted and analyzed.

   Inquiries may be made to:

   Dr. David E. Kissel – Director, AESL e-mail: dkissel@uga.edu
   Responsible for administration, policy and budgets of all units of the Agricultural and Environmental Services Laboratories. Participates in development of soil tests and plant analysis recommendations and implements appropriate methodology and reporting of results.

   Dr. Leticia Sonon – Program Coordinator e-mail: lsonon@uga.edu
   Responsible for overall routine operation of the laboratory. Develops and maintains required methodologies. Coordinates special requests and projects.

   Gary Williams – Laboratory Supervisor e-mail: garyw@uga.edu
   Manages day-to-day operations of the laboratory.

   Melissa Pruitt – Administrative Associate II e-mail: mdpruitt@uga.edu
   Receives and directs incoming calls. Handles purchase orders and personnel records. Performs secretarial duties for the Director of AESL.

   Vickie Bates – Associate Accountant e-mail: vbates@uga.edu
   Responsible for processing invoices & maintaining accounts payable for all laboratories.

   Alice Moreland – Accounting Technician e-mail: alicem@uga.edu
   Prepares and send invoices to clients and maintains accurate listing of accounts. Receives and directs incoming calls.

2. **Feed & Environmental Water Laboratory** (**FEW**)
2300 College Station Road, Athens, Georgia 30602-4356
phone: (706) 542-7690; fax: (706) 542-1474

This unit performs analyses on and interpretive information about feeds, forages, foods, feed ingredients, natural waters and industrial wastewater.

Inquiries may be made to:

Dr. David E. Kissel – Director, AESL e-mail: dkissel@uga.edu
Responsible for administration, policy and budgets of all units of the Agricultural and Environmental Services Laboratories. Participates in development of soil tests and plant analysis recommendations and implements appropriate methodology and reporting of results.

Dr. Uttam Saha – Program Coordinator e-mail: sahau@uga.edu
Responsible for overall routine operation of the laboratory. Develops and maintains required methodologies. Coordinates special requests and projects.

Laura Daniel – Laboratory Supervisor e-mail: lauradan@uga.edu
Manages day-to-day operations of the laboratory.

Laura Huffer – Accounting Assistant e-mail: laurah@uga.edu
Responsible for processing invoices & maintaining accounts payable. Receives and directs incoming calls. Performs secretarial duties for the Program Coordinator of FEW.

3. **Pesticide & Hazardous Waste Laboratory (PHW)**
2300 College Station Road, Athens, Georgia 30602-4356
phone: (706)542-9023; Fax: (706)542-1474

This laboratory unit analyzes for the presence of certain insecticides and herbicides in soil, plant, fish and water samples. It also provides tests for hazardous materials in municipal and industrial sludges, petroleum and organic solvents in soil and water, and drinking water standards for municipal water systems and bottled water manufacturers.

Inquiries may be made to:

Dr. David E. Kissel – Director, AESL e-mail: dkissel@uga.edu
Responsible for administration, policy and budgets of all units of the Agricultural and Environmental Services Laboratories. Participates in development of soil tests and plant analysis recommendations and implements appropriate methodology and reporting of results.

Dr. Parshall B. Bush – Professor Emeritus, Program Coordinator e-mail: pbush@uga.edu
Responsible for overall routine operation of the laboratory. Develops and maintains required methodologies. Coordinates special requests and projects.

Natalie Bond – Laboratory Supervisor e-mail: nbond@uga.edu
Manages day-to-day operation of the laboratory.

Sheron Nordlund - Senior Secretary e-mail: nordlund@uga.edu
Receives and directs incoming calls. Handles purchase orders and personnel records. Performs secretarial duties for the Program Coordinator of PHW.

4. **Trace Level Analysis Laboratory (TLA)**
2300 College Station Road, Athens, Georgia 30602-9105
phone: (706) 542-7690; Fax: (706) 542-1474

This facility provides numerous trace level elemental analyses for soil, plants, water, animal waste, sludge and cotton petioles. Submission forms (see submission form section) are provided for the various types of samples analyzed.

Inquiries may be made to:

Dr. David E. Kissel – Director, AESL e-mail: dkissel@uga.edu
Responsible for administration, policy and budgets of all units of the Agricultural and Environmental Services Laboratories. Participates in development of soil tests and plant analysis recommendations and implements appropriate methodology and reporting of results.

Jake Mowrer – Laboratory In-charge e-mail: jmowrer@uga.edu
Responsible for overall routine operation of the lab. Develops and maintains required methodologies.

Melissa Pruitt – Administrative Secretary e-mail: mdpruitt@uga.edu
Receives and directs incoming calls. Handles purchase orders and personnel records. All secretarial duties for Head, Agricultural & Environmental Services Laboratories.

Vickie Bates – Associate Accountant e-mail: vbates@uga.edu
Responsible for processing invoices & maintaining accounts payable.

III. Testing Fee Policies and Billing

III

TESTING FEE POLICIES AND BILLING

A. Fee Policies

1. Scheduled Services

The funds to operate the AESL are generated from fees and contracts as well as state and federal appropriations. The fee schedule is the basis for all routine and special analytical services within the state of Georgia.

2. Extension Specialists

With proper submission forms (*available from SPW Lab*), troubleshooting samples will be tested at no cost in limited quantities. Large-scale surveys or research projects will be charged the scheduled fee per sample, the same as researchers.

3. Research Samples

College of Agricultural and Environmental Sciences researchers, in-state USDA and other closely allied UGA units will be charged the scheduled fees and must use a Research Sample Submission Form (see example in "Form" section). Research samples should be submitted directly to the appropriate laboratory, not through the county Extension office.

4. County Program Support

County extension agents often need laboratory analysis to support educational programs in their county that address issues specific to their clients needs. These analyses are referred to as "County Program Samples". In addition, agents often help clients in their county to solve problems such as poor growth in agricultural crop production, animal mortality, or health issues related to drinking water quality in the home. These analyses are called "Trouble-Shooting Samples".

To simplify, both County Program and Trouble-Shooting samples will be referred to as "County Program" samples. The Agricultural and Environmental Services Laboratories have in the past been asked by County Extension Faculty to analyze these County Program samples free of charge (soil, plants, water, animal feed, or animal waste). Due to budget constraints, the laboratories must limit the free analysis.

Because of the need for continuing county programs, but at the same time needing to limit expenditures and to be fair to all the counties, the following County Program sample procedures are now being used.

1. An amount of credit is provided to each county every year to be used for free analysis for their county programs. The cost of the free analysis will be charged against the available credit in the account, with bookkeeping of available credit for each county provided by the Agricultural and Environmental Services Laboratories. The amount of credit available for free county program samples will be updated in Data Transfer once we've processed the samples. Any unused credit provided by the laboratories would **not** carry over to future fiscal years.

2. When submitting County Program samples, write "**County Program**" next to the samples on the submission forms. You may use the Online Submission forms if these are soil or water samples.

3. We do not offer half-price fees for school projects. You may use county program funds for this purpose at your discretion.

The amount of county program funds is now calculated as $100 + 1 % of the amount of income generated by your online submission samples for the previous fiscal year. For example, if you used Online Submission last year to submit $5,000 worth of samples, your county program total this fiscal year would be $100 + $50 = $150.

B. Payment of Fees

1. Information Regarding Payment of Fees

a. Our most recent price list is in this Handbook. Do not refer to prices listed in the codebook, on sampling kits or on other printed material. If you have old materials in your office, it would be a good idea to tell your clients that prices listed in them may not be current.

b. Always insert any notification you receive regarding changes in fees in your Fee Schedule Handbook for future reference.

c. Collect fees from clients before submitting them to the laboratory. If fees are not submitted with the samples, you must instruct us as to what tests you are requesting and include specific instructions regarding the billing.

d. When payment is sent after samples are submitted but before an invoice is issued, please provide us with as much information as possible so we can match the payment with the samples. (Client's name, date submitted, sample type, etc.)

e. If you are submitting payment for an invoiced sample along with prepaid samples, always include a copy of the invoice or a note referencing the invoice number, lab number or kit number.

f. **Do not send cash** with samples or invoices.

g. When a client requests a special analysis that is not listed on the fee schedule, call the laboratory to confirm the fee.

h. Make separate checks for samples sent to different lab units.

i. If your office or a client receives a bill and you believe the fee has been paid, contact the laboratory as soon as possible. Unfortunately, checks sometimes get lost or are separated from the samples in the rush of opening, separating and preparing the samples for analysis.

j. Please inform the appropriate lab of any circumstances regarding problems with payment of an invoice. We will try to reach an agreement suitable to all parties involved.

k. Make checks payable to individual laboratories as follows:

UGA - Soil, Plant, & Water Lab
UGA - Feed & Environmental Water Lab
UGA - Pesticide & Hazardous Waste Lab

2. Monthly Billing

Monthly Billing is available for online submission of soil and water samples. If you have not enrolled in Monthly Billing, we encourage you to do so. At the time of this writing, 152 counties have enrolled.

a. Advantages of Monthly Billing

1. Samples could be shipped to the laboratory without waiting for the agent's signature on a check.

2. The monthly invoice contains a list of all samples received from your office, including client names, lab numbers, tests requested, and price per sample. This should help with your bookkeeping, because it provides a detailed record of all tests that we've run for your office.

3. Monthly billing eliminates confusion as to which charges have been paid and which are still outstanding.

Here are the specifics for the Monthly Billing program:

1. Send e-mail to soiltest@uga.edu indicating that you wish to participate. We will bill you for all samples submitted online after you have received confirmation of enrollment.

2. You must use the Online Submission Forms in Data Transfer to participate.

3. We will bill you by the 10th of each month, and payment will be due at the end of the month. This should help ensure that your clients' payments have been deposited to your bank account. The bill will include samples we *completed* during the previous month. The bill will come in the form of an e-mail attachment.

b**. Monthly Billing Frequently Asked Questions**

1. I need a test that's not available through Online Submission. Will you bill me for this test?

No. You should send payment for any samples that are not submitted online.

A good rule of thumb: If you have to write any special instructions on the forms, don't use Online Submission, and be sure to send payment with the samples.

2. Will payments be due on the 10th of each month, or is that when we will receive the billing statement?

You will receive an invoice on the 10th of each month, which will cover all samples completed for the previous month. This bill will go to your county office e-mail address, and it will be due at the end of the month.

3. Are you requesting that each county submit one check totaling the cost of all soil samples for the month, or can we send the individual checks that we receive from customers requesting the samples?

You should deposit all client checks to your own bank account and pay us with one check.

4. Is the turn-around for soil reports received from the online sample submissions the same?

Turn-around time will be the same. Routine samples are generally available for download the afternoon after we receive them. Any additional time depends on the time it takes the mail to deliver the samples to us.

5. Will we need to submit a printout of the online submission form along with the box of soil samples we mail to the SPW lab?

Yes. Clicking "Print Forms" creates the forms we need. In the printer dialog box, change "Number of copies" to "2" so that you'll have a copy in-house.

6. What if my computer is in the shop, or I can't log on the Internet?

If you cannot run the Online Submission Form program, you must send payment with your samples.

7. Who do I contact if I have questions or problems with the program?

Send an e-mail message to: soiltest@uga.edu

Or by phone: 706-542-5350 – Ask for Rick or Corey.

IV

SOIL

A. GENERAL INFORMATION

Soil Sample Bags. Soil sample bags are provided to farmers and homeowners free of charge. It is important that clients submit the required amount of sample so that analysis can be done properly. For standard routine analysis, each bag should be filled with soil up to the **fill line.** Additional amount of sample may be required if several tests are requested.

For ease in sample handling and to minimize mailing costs, clients are advised to air dry samples at home overnight before submitting their samples to their local extension office.

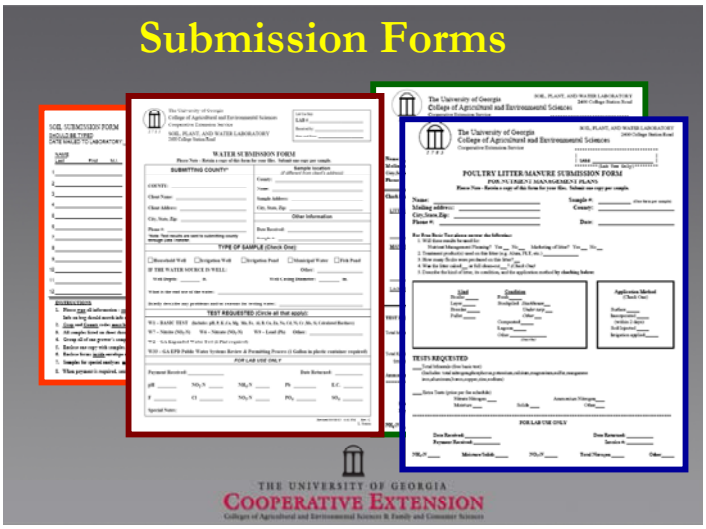
The county extension office may obtain their sample bags from:

Storekeeper Cooperative Extension
The University of Georgia
Room 103, Hoke Smith Annex
Athens, GA 30602

Sample Submission. The laboratory supports online submission of samples that allows efficient entry of client information. The program also automatically creates the appropriate submission forms and the corresponding test fees.

Submission Forms. Sample submission forms may be obtained online at:

http://aesl.ces.uga.edu/forms



B. ROUTINE, SPECIALS, AND GREENHOUSE MIXES

Test No.	Description	Fee ($)	Lab
S1	Routine Test	6.00	SPW
	pH Lime requirement Phosphorus (P) Potassium (K) Calcium (Ca) Magnesium (Mg) Zinc (Zn) Manganese (Mn)		
S1A	pH only	3.00	SPW
S1C	Cast (Calcium Soil Test – Peanut Pegging Zone)	3.00	SPW
S2	**S1** + Na, Fe, Cu, Cr, Mo, Ni, Cd, Pb + CEC (Cation Exchange Capacity by Mehlich I sum), Percent Base Saturation	11.00	SPW
S3	Boron (Hot water extractable)	9.00	SPW
S4	Soluble Salts (electrical conductivity - EC)	9.00	SPW
S5	Texture/Mechanical (%sand, silt, clay)	15.00	SPW
S6	Organic Matter (loss on ignition, LOI)	8.00	SPW
S7	Nitrate-Nitrogen (KCl extractable NO_3-N)	10.00	SPW
S8	Ammonium-Nitrogen (KCl extractable NH_4-N)	10.00	SPW
S9	Nitrite-Nitrogen (NO_2-N)	10.00	SPW
S10	Exchangeable aluminum (KCl extractable Al)	10.00	SPW

Test No.	Description	Fee ($)	Lab
S11	Greenhouse/Nursery Test	30.00	SPW
	pH, Calcium (Ca), Ammonium (NH_4-N) Phosphorus (P), Magnesium (Mg), Soluble Salts (SS) Potassium (K), Nitrate (NO_3-N)		
S12	pH only (**for greenhouse/nursery media only**)	8.00	SPW
S13	Total Elemental Analysis (**acid digestion**)	25.00	SPW
	Phosphorus (P), Sulfur (S), Boron (B) Potassium (K), Manganese (Mn), Copper (Cu) Calcium (Ca), Iron (Fe), Zinc (Zn) Magnesium (Mg), Aluminum (Al), Sodium (Na) Lead (Pb), Cadmium (Cd), Chromium (Cr) Nickel (Ni), Molybdenum (Mo)		
	For arsenic, selenium, and other metals requiring low level analysis, please refer to page 16 (S41-S43) – Trace Level Analysis		
S17	Mercury (Hg) – **acid digestion**	40.00	TLA
S18	Gypsum Subsoil Test for Alfalfa	15.00	SPW
S19	Total Carbon (C) + Total Nitrogen (N) + Total Sulfur (S) – **dry combustion**	21.00	SPW
S20	Any single element (in Test **S19**)	9.00	SPW
S21	Any 2 elements (in Test **S19**)	16.00	SPW
S22	Extractable Chloride [$Ca(NO_3)_2$ extraction]	10.00	SPW
S23	Water-Extractable Anions	30.00	SPW
	Chloride (Cl), Phosphate (PO_4) Fluoride (F), Sulfate (SO_4) Nitrate (NO3)		

Test No.	Description	Fee ($)	Lab
S24	Any one anion in **S23**	10.00	SPW
S25	Lead (Pb) trace level in soils – **acid digestion**	40.00	TLA
Saturated Paste Extract (SPE) Tests SPE Preparation - $20 ***Note: Minimum sample volume required = 250 g***			
S26	Sodium Adsorption Ratio (SAR) (**SPE preparation + Ca, Mg, K**)	35.00	SPW
S27	Soluble Salts/Electrical Conductivity (**SPE preparation + EC**)	30.00	SPW
S28	Anions (Cl, PO_4, F, SO_4, NO_3) (**SPE preparation + anions**)	45.00	SPW
S29	pH (**SPE preparation + pH**)	25.00	SPW
S30	S26+S27+S28+S29 (**SPE preparation + individual tests**)	75.00	SPW
S31	Bulk density (pre-cored, soil volume pre-determined by client)	12.00	SPW

C. TRACE LEVEL ANALYSIS

Test No.	Description				Fee ($)	Lab
S41	Priority Pollutants By ICP-AVOES	Antimony (Sb)	Chromium (Cr)	Selenium (Se)	150.00	TLA
		Arsenic (As)	Copper (Cu)	Silver (Ag)		
		Beryllium (Be)	Lead (Pb)	Thallium (Tl)		
		Cadmium (Cd)	Nickel (Ni)	Zinc (Zn)		
S42	Any **one**† of Available Metals and/or Non-Metals by ICP-AVOES	Aluminum (Al)	Copper (Cu)	Selenium (Se)	40.00	TLA
		Antimony (Sb)	Gold (Au)	Silicon (Si)		
		Arsenic (As)	Iron (Fe)	Silver (Ag)		
		Barium (Ba)	Lead (Pb)	Sodium (Na)		
		Beryllium (Be)	Magnesium (Mg)	Strontium (Sr)		
		Bismuth (Bi)	Manganese (Mn)	Thallium (Tl)		
		Boron (B)	Molybdenum (Mo)	Tin (Sn)		
		Cadmium (Cd)	Nickel (Ni)	Titanium (Ti)		
		Calcium (Ca)	Palladium* (Pd)	Uranium (U)		
		Chromium (Cr)	Phosphorus (P)	Vanadium (V)		
		Cobalt (Co)	Potassium (K)	Zinc (Zn)		
S43	Two elements from S42				50.00	TLA
† Additional elements (> 2) from W43 are $10.00 each.						

D. PESTICIDE ANALYSIS IN SOIL

To provide a proper interpretation, it is very important to submit a representative sample as well as an adequate amount of sample to be analyzed. Refer to "**fill line**" on soil bag. An additional amount of sample may be required if several tests are requested. Provide sample depth information.

The sample should not be dried.
Do not submit samples for pesticide analysis in plastic containers.

Test No.	Description	Fee ($)	Lab
S44	**Insecticide Screen**	100.00	PHW
	Aldrin, Chlordane, DDD, DDE, Dieldrin, Endrin, Ethion, DDT, Heptachlor, Heptachlor Epoxide, Lindane, PCB 1242, PCB 1254, Malathion, Methoxychlor, Mirex, Parathion, PCB 1260, Toxaphene		
S45	**Herbicide Analysis**	100.00	PHW
	Atrazine, Balan, Bromacil, Devrinol, Dual, Eptam, Goal, Hexazinone, Lasso, Ordram, Oxadiazon, Paarlan, Propachlor, Propazine, Prowl, Roneet, Sencor, Simazine, Sutan, Terbacil, Tillam, Tolban, Treflan, Vernam		
S46	**Phenoxyherbicide Analysis**	100.00	PHW
	2,4-D, 2,4, 5-T, 2,4-DB, Dicamba, Picloram, Silvex		
S47	**Termitacide Analysis**	100.00	PHW
	Dursban, Chlordane, Cypermethrin, Bifenthrin, Pydrin, Permethrin		

Note: Other insecticide, herbicide, pesticide and termitacide analyses are available upon request. Normal analysis time is approximately two (2) weeks. Faster analysis time is available upon request.

V

PLANT TISSUE

A. GENERAL INFORMATION

Leaf tissue should be placed directly into large portion of plant kit or brown paper bag. **Do not send roots or soil. Do not wrap or enclose leaves in plastic or paper bags**. Allow wet leaf tissue to air dry before shipment.

If sampling instructions are not given for the crop being submitted, sample the most recent mature leaves. A "Plant Submission Form" (see example in Forms Section) should be completed with as much information as possible to insure appropriate recommendation.

B. PLANT TISSUE ANALYSIS FEES

Test No.	Description	Fee ($)	Lab
P1	Basic Plant Test - Standard for all analysis	20.00	SPW
	Total Nitrogen (N) Total Sulfur (S) Phosphorus (P) Potassium (K) Calcium (Ca) Magnesium (Mg) Manganese (Mn) Iron (Fe) Aluminum (Al) Boron (B) Copper (Cu) Zinc (Zn) Nickel (Ni)		
P2	ICP Minerals Only (without N and S)	15.00	SPW
P3	Total Carbon (C) + Total Nitrogen (N) + Total Sulfur (S)	21.00	SPW
P4	Any single element (in **P3**)	9.00	SPW
P5	Any two elements (in **P3**)	16.00	SPW
For arsenic, selenium, and other metals requiring low level analysis, please refer to page 20 (P41-P43) – Trace Level Analysis			
P9	Mercury – **acid digestion**	40.00	SPW
P13	Single Petiole for Nitrate and Phosphorus	12.00	SPW

Test No.	Description	Fee ($)	Lab
P14	Nitrate, Phosphorus, & Potassium Monitoring (Cotton Petiole Kit)	60.00	SPW

C. TRACE LEVEL ANALYSIS

Test No.	Description				Fee ($)	Lab
P41	Priority Pollutants By ICP-AVOES	Antimony (Sb)	Chromium (Cr)	Selenium (Se)	150.00	TLA
		Arsenic (As)	Copper (Cu)	Silver (Ag)		
		Beryllium (Be)	Lead (Pb)	Thallium (Tl)		
		Cadmium (Cd)	Nickel (Ni)	Zinc (Zn)		
P42	Any **one**† of Available Metals and/or Non-Metals by ICP-AVOES	Aluminum (Al)	Copper (Cu)	Selenium (Se)	40.00	TLA
		Antimony (Sb)	Gold (Au)	Silicon (Si)		
		Arsenic (As)	Iron (Fe)	Silver (Ag)		
		Barium (Ba)	Lead (Pb)	Sodium (Na)		
		Beryllium (Be)	Magnesium (Mg)	Strontium (Sr)		
		Bismuth (Bi)	Manganese (Mn)	Thallium (Tl)		
		Boron (B)	Molybdenum (Mo)	Tin (Sn)		
		Cadmium (Cd)	Nickel (Ni)	Titanium (Ti)		
		Calcium (Ca)	Palladium* (Pd)	Uranium (U)		
		Chromium (Cr)	Phosphorus (P)	Vanadium (V)		
		Cobalt (Co)	Potassium (K)	Zinc (Zn)		
P43	Two elements from P42				50.00	TLA
† Additional elements (> 2) from P42 are $10.00 each.						

D. SAMPLING GUIDE FOR PLANT NUTRITIONAL ANALYSIS

These guidelines give you the necessary information for collecting samples for plant nutritional analysis. Proper sampling for plant analysis is very important and requires that a definite plant part be taken at a specific time during the growing season. Following these guidelines will help ensure that a sufficient quantity of plant tissue is submitted for analysis and that the sample collected is representative of the area under study.

Key Points to Remember

1. DO NOT SAMPLE

   (a) Diseased, insect or mechanically damaged plants.
   (b) Stressed plants (i.e., drought or extremes in temperature).
   (c) Plants in advanced fruiting stages.
   (d) Tissue that is contaminated with dust or soil. If all the tissue available is dusty, wash gently in flowing water. However, do not prolong washing because some nutrient elements like potassium are water soluble.

2. Plant samples should be placed directly into a paper bag of appropriate size. DO NOT WRAP OR ENCLOSE samples in plastic bags or other impermeable containers. Allow succulent or wet tissue samples to air dry at least one day before mailing to the laboratory.

3. When sampling plants with suspected nutrient deficiencies at times other than recommended, take two samples, one from the normal plants and one from the abnormal plants. Place in separate mailing kits and make reference to each on history form.

4. If sampling instructions are not given for the crop you wish analyzed, a good RULE OF THUMB is to sample the most recent mature leaves.

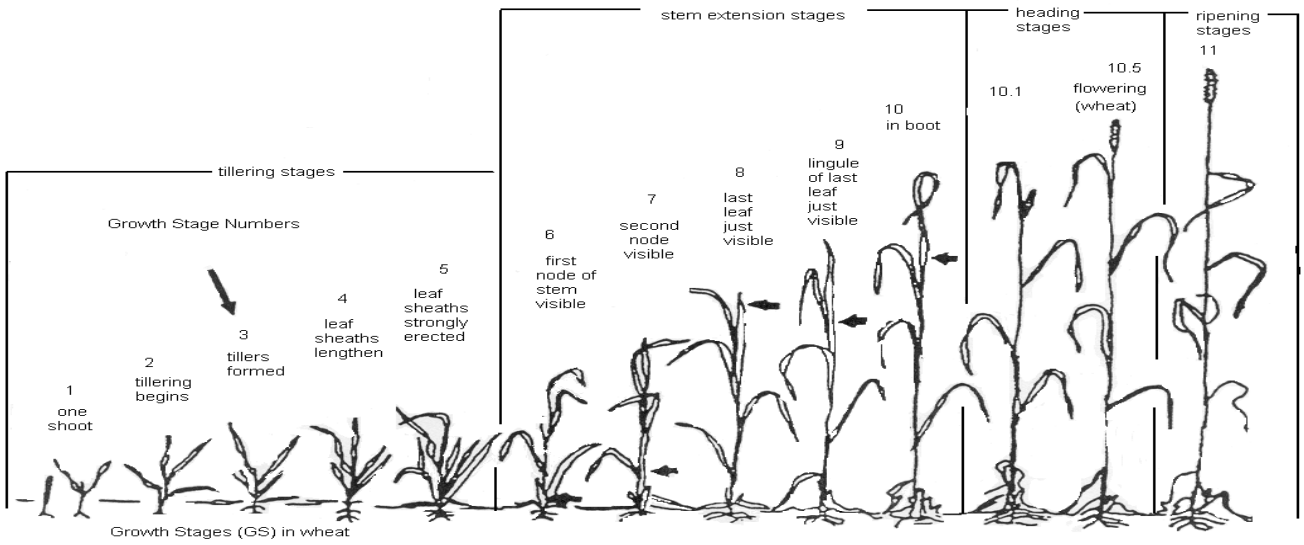
5. Complete the questionnaire as accurately as possible. The more complete the questionnaire is filled out the better the interpretation and recommendation will be. Place this information (Plant Submission Form) inside the mailing envelope and mail with the samples

6. When possible, collect a soil sample at the same location the plant sample was taken. Send soil sample separately from plant samples but make reference to each other so the interpreters have access to the soil and plant analysis data.

1. Agronomic Crops

Stage of Growth	Plant Part to Sample	Number of Plants to Sample
	ALFALFA	
Prior to or at 1/10 bloom stage	Mature leaf blades taken from the top 4 to 6 inches of the plant	40-50
	CLOVER AND OTHER LEGUMES	
Prior to bloom	Mature leaf blades taken about ½ of the way down from the top of the plant	40-50
	CORN	
1) Seedling stage (less than 12") **or**	All the above the ground portion	15-20
2) Prior to tasseling **or**	The first fully developed leaf below the whorl	15-20
3) From tasseling to silking	The entire leaf at the ear node (or immediately above or below it)	
Sampling after silking occurs is not recommended.		
	COTTON	
Prior to or at first bloom or when first	Youngest fully mature leaves on main stem squares appear	30-40
	HAY, PASTURE OR FORAGE GRASSES	
Prior to seed head emergence or at the optimum stage for best quality forage	Top 6 inches of plant	40-50
	PEANUTS	
Prior to or at bloom stage	Mature leaves from both the main stem and either cotyledon lateral branch	40-50

Stage of Growth	Plant Part to Sample	Number of Plants to Sample
	SORGHUM-MILO	
Prior to or at heading	Second leaf from top of plant	15-25
1) Seedling stage (less than 12")	All the above ground portion	20-30
or		
2) Prior to or during initial flowering	Two or three fully developed leaves at the top of the plant	
Sampling after pods begin to set not recommended.		
	TOBACCO	
Before bloom	Uppermost fully developed leaf	8-12
	TURF	
During normal growing of season; at least two days re-growth	Leaf blades - clip by hand to avoid contamination with soil or other material	½ pint material
	WHEAT	
1) Tillering (GS-3) to just prior to heading (GS 10-boot stage)	All above ground portion	30-40
or		
2) Just prior to heading (GS 10)	Flag leaf	40-50
Sampling after heading not recommended. See figure below.		



2. Vegetable Crops

Stage of Growth	Plant Part to Sample	Number of Plants to Sample
	ASPARAGUS	
Mid growth, 18-36" up	Mature fern from	10-20
	BEANS	
1) Seedling stage (less than 12") 2) 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
	HEAD CROPS (Cabbage, etc.)	
1) Prior to heading 2) Head ½ grown	First mature leaves from center of whorl Young wrapper leaf; 2 leaves per plant	10-20
	LEAF CROPS (Lettuce, Spinach, Turnip Greens, Collards, etc.)	
Mid growth	Youngest mature leaf	35-55
	MELONS (Water, Cucumber, Muskmelon)	
Early stages of growth prior to fruit set	Mature leaves near the growing tip of the plant	20-30
	PEAS	
Prior to or during initial flowering	Leaves from the third from the top node down from the plant	30-60
	PEPPERS	
Prior to or at bloom stage	Most recently mature leaves	20-30
	POTATOES, IRISH	
Early flowering to tubers ½ grown	Upper most mature	20-30
	POTATOES, SWEET	
Mid growth	Most recently mature leaves	20-30
	ROOT CROPS (Carrots, Onions, Beets, etc.)	
Prior to root or bulb enlargement	Center mature leaves	20-30

	SWEET CORN	
1) Prior to tasseling 2) At tasseling	The entire fully mature leaf below the whorl The entire leaf at the ear node	20-30
	TOMATO (Field)	
Prior to or during early bloom stage	Third or fourth leaf from growing tip	20-25
	TOMATO (Greenhouse)	
Prior to or during fruit set	1) Young plants: leaves adjacent to 2nd and 3rd clusters 2) Older plants: leaves from 4th to 6th clusters	20-25

3. Fruits and Nuts

Stage of Growth	Plant Part to Sample	Number of Plants to Sample
	APPLE	
8-10 weeks after fall bloom	Healthy mid-terminal leaves of current season's growth, taking 4 to 8 leaves per tree	50-100
	APRICOT, ALMOND, CHERRY, PEAR, PRUNE	
Mid season	Healthy mid-terminal leaves of current year's growth or from spurs	50-100
	BLUEBERRY, RABBITEYE	
First two weeks after harvest	Mature leaves from mid-portion of current season's growth	25-40
	GRAPES	
End of bloom period	Petioles from leaves adjacent to fruit clusters	60-100
	GRAPE, MUSCADINE	
Mid to late summer but prior to final swelling of fruit	Most recent mature leaves adjacent to fruit clusters	25-30
	PEACH	
12 to 14 weeks after bloom	Mature leaves from mid-portion or near base of current season's terminal growth, taking 4 to 8 leaves per tree	50-100
	PECAN	
56 to 84 days after catkin fall; July 7 to August 7	Middle pair of leaflets from mid-portion of terminal growth	100
	RASPBERRY	
Mid Season	Youngest mature leaves on laterals or "primo" canes	20-40
	STRAWBERRY	
4 to 5 weeks after peak bloom	Youngest fully expanded mature leaves	50-75
	WALNUT	
6 to 8 weeks after bloom	Middle pairs of leaflets from mature shoots	30-35

4. SAMPLING INSTRUCTIONS FOR PECANS

Results of a leaf analysis can be no better than the sampling procedures used. To help ensure obtaining reliable analytical results and fertilizer recommendations follow these sampling instructions.

1. Sample trees between July 7th and August 7th. Sampling can be extended into mid-August without significantly affecting the results.

2. Take one sample every 10 to 15 acres. If more than one soil type is present in the sampling area and if growth and production varies appreciably in these areas, take one sample from each soil type. Take samples at random using a zig-zag sampling pattern across the grove.

   When samples are taken annually, the pattern of sampling should be the same; better yet, samples should be taken from the same marked trees or rows.

3. Collect 100 middle pair of leaflets from the middle leaf of this year's growth. (See sketch on following page.) Use terminal shoots exposed to the sun. Avoid twigs from the interior of the tree. Collect leaflets from all sides of the tree. Avoid leaflets damaged by insects and diseases.

4. Sample trees of different varieties and different ages separately.

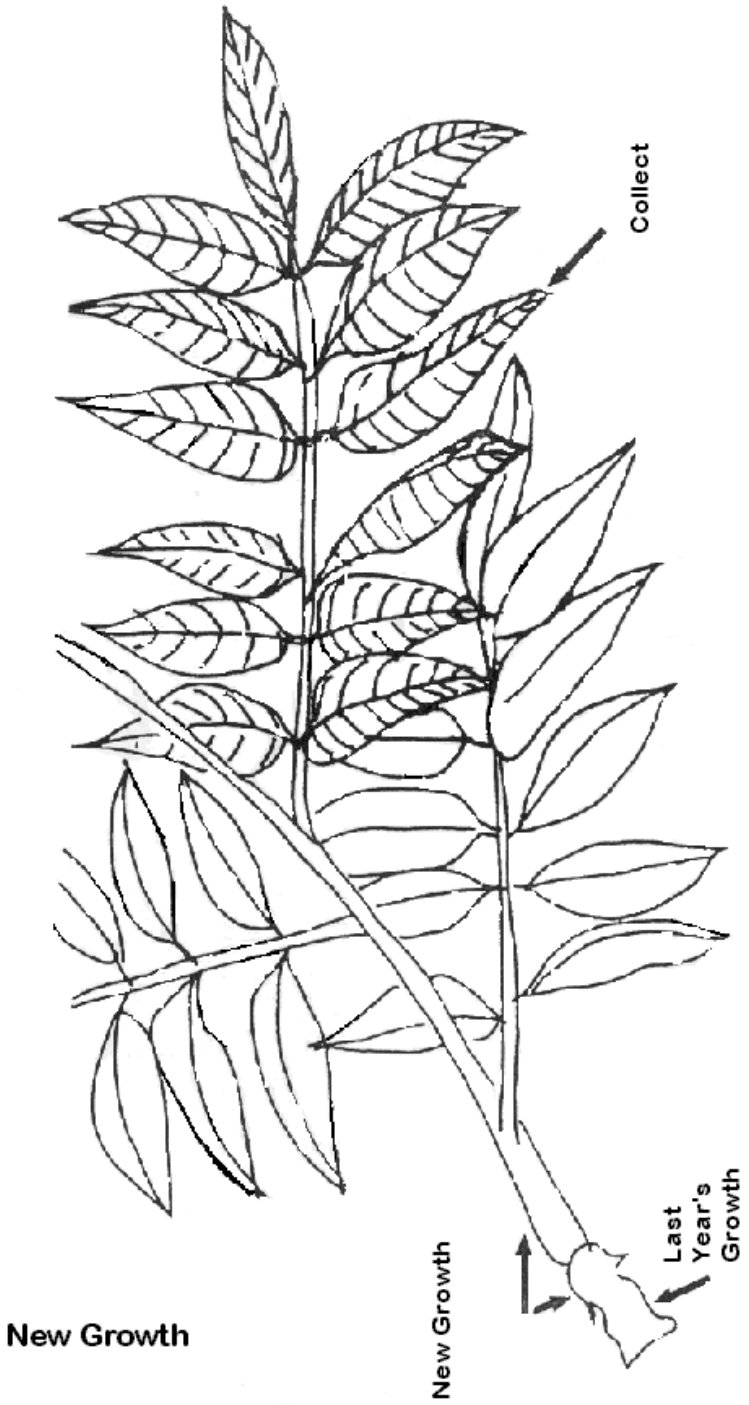
5. Abnormal trees or trees not representative of the area should be sampled and sent separately. A complete and accurate description of abnormalities should accompany such samples.

6. Immediately upon collection, wipe leaves (entire surface, both top and bottom) with a damp cellulose sponge or cheesecloth to remove dust and spray residue. Do not allow the leaves to come into contact with rubber or galvanized containers. Partially air dry and place in a large paper bag.

7. Complete the questionnaire provided by the laboratory. Place the completed questionnaire in the smaller envelope together with a check for appropriate fees payable to "UGA Soil, Plant and Water Laboratory."

8. If recent soil test data are not available, collect a soil sample and send it to the Soil, Plant, and Water Laboratory. Soil sample bags are available at your local extension office.

Pecan Leaf



5. Ornamentals and Flowers

Stage of Growth	Plant Part to Sample	Number of Plants to Sample
	CARNATIONS	
1) Unpinched plants	4th or 5th leaf pairs from base of plant	20-30
2) Pinched plants	5th and 6th leaf pairs from top of primary laterals	20-30
Prior to or at flowering	**CHRYSANTHEMUMS**	
	Upper leaves on flowering stem	20-30
Current year's growth	**ORNAMENTAL TREES**	
	Fully developed leaves	30-100
Current year's growth	**ORNAMENTAL SHRUBS**	
	Fully developed leaves	30-100
Prior to or at flowering	**POINSETTIAS**	
	Most recently mature fully expanded leaves	15-20
	ROSES	
During flower production	Upper leaves on the flowering stem	20-30

VI

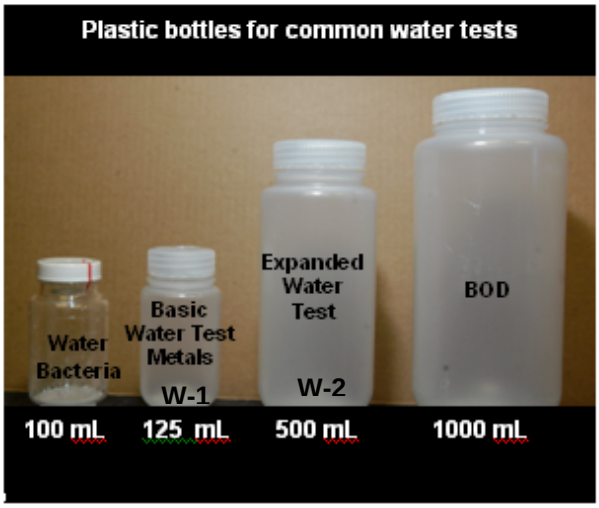
WATER

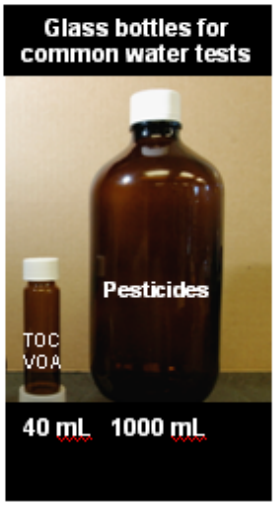
A. GENERAL INFORMATION

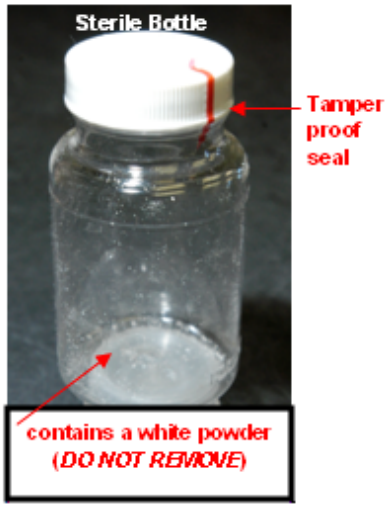
Water samples for submission to the laboratories vary as to the type of container and volume appropriate for different tests. Much time can be saved if water is initially sampled in the correct container.

1. Sample Containers

Sampling containers for testing well water or ponds are available to Extension Service County Agents from the University of Georgia Extension Storekeeper, Hoke Smith Annex (706/542-8844). Wastewater samples should be submitted in the appropriate container, either plastic or glass depending on the tests needed. Research samples should be submitted in appropriate containers – contact AESL if you need bottles. Visit our website for specific sample container requirements (http://aesl.ces.uga.edu/samplecontainers).







Many of the chemical parameters are time sensitive, which means that there is a specified amount of time that the sample can be held before testing procedures must begin. Table 1 contains the minimum sample size, preservatives, and maximum holding times for commonly requested water tests. On time sensitive samples (less that 7 days), the laboratory should be contacted for scheduling.

2. Sample Collection Techniques

In the past, except when testing for lead, the recommended sample collection technique for drinking water from wells was to collect water from the spigot closest to the well head and to let water run for 10-15 minutes before collecting the sample. This procedure was designed to address groundwater quality excluding the effects from the household plumbing, storage tank, well construction, and pump.

Except for microbiology, we now recommend that all drinking water samples be collected from the first draw water out of the kitchen faucet or from the faucet used most often for drinking. Please follow three basic protocols when collecting a drinking water sample:

1. A first draw water sample will be collected (after a minimum of 6 hours, but not more than 12-hour period) during which time there was no water usage prior to the sampling. The GA-EPD recommends that either early morning or evening upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist.
2. A kitchen or bathroom cold-water faucet is to be used for sampling. If the primary concern is the well pump, draw the water from as near the well head as possible.
3. Place a clean sample container below the faucet and gently open the cold water tap. Completely fill all sample bottles.

For Microbiology testing (i.e. Bacteria), follow 5 basic protocols when collecting a drinking water sample:

1. Select an inside faucet that is clean and not leaking.
2. Remove any faucet attachments such as filters, aerators, screens, splashguards, or water-saver valves.
3. Sanitize the faucet inside and out by dipping the faucet neck into undiluted chlorine bleach (do not use color-safe bleach).
4. Open tap fully and flush the faucet and pipes by running water for 3 minutes. If sampling from a faucet that mixes hot and cold water, run hot water for 3 minutes, then cold water for 3 minutes. Do not turn off the water, but reduce the flow to avoid splashing.
5. Uncap the sample bottle without touching the inside of the cap or bottle, fill the bottle above the 100 mL line, but not completely full and recap. Please note that the white substance in the bottle is a dechlorinating agent, which is essential. Fill the bottle only once; do not rinse.

Ponds and streams should be sub-sampled at various depths and positions across the body of water. Sub-samples should then be combined to create one sample.

Wastewater samples should be collected per the requirements of the permit.

TABLE 1

3. SAMPLING & HANDLING REQUIREMENTS FOR COMMONLY REQUESTED WATER TESTS

Test	Container	Sample Bottle Size (ml)	Preservative	Maximum Regulatory **Holding Time ***
Ammonia-Nitrogen	P,G	500	Analyze as soon as possible or add H_2SO_4 to pH <2 then refrigerate	28 d
Acidity	P, G(B)	125	Refrigerate	14 d
Alkalinity	P, G	200	Refrigerate	14 d
BOD	P,G	1000 (1 Liter)	Refrigerate	48 h
COD	P,G	125	Analyze as soon as possible, or add H_2SO_4 to pH <2 then refrigerate	28 d
Color	P,G	50	Refrigerate	48 h
Chlorine, residual	P,G	500	Analyze immediately	Immediately
Chloride	P	125	Refrigerate	28 d
Conductivity	P,G	500	Refrigerate	28 d
Hardness	P, G	125	H_2SO_4 to pH<2 then refrigerate	7 d
Herbicides	G(A)	1000 (1 Liter)	Refrigerate	7 d
Mercury	P, G	125	Refrigerate; HNO_3 to pH<2	28 d
Metals (Trace) except Mercury	P	200	HNO_3 to pH<2	6 mo
Nitrate+Nitrite-Nitrogen	P,G	200	Analyze as soon as possible or refrigerate	48 h (28 d for chlorinated samples)
Organic, Kjeldahl Nitrogen	P,G	500	H_2SO_4 to pH<2 then refrigerate	28 d
Oil and Grease	G, wide-mouth calibrated	1000 (1 Liter)	Add H_2SO_4 to pH<2 then refrigerate	28 d
pH	P,G	125	Analyze immediately	Immediately
Pesticides	G(A)	1000 (1 Liter)	Refrigerate	7days

Test	Container	Sample Bottle Size (ml)	Preservative	Maximum Regulatory **Holding Time ***
Phosphate-Ortho	P, G(A)	125	For dissolved phosphate filter immediately; refrigerate	48 h
Phosphorus, Total	P,G	125	H_2SO_4 to pH<2 then refrigerate	28 d
Solids	P,G	1000	Refrigerate	7 d
Total Organic Carbon	G	40	HCl to pH<2 then refrigerate	28 d
Turbidity	P,G	125	Refrigerate	48 h

P = plastic (polyethylene or equivalent); G = glass; G(A) = glass, amber; G(B) = glass, borosilicate

B. RECOMMENDED WATER TESTS

AMBIENT SURFACE WATER MONITORING

Custom chemical analysis packages based on specific monitoring needs. Typical requests include: alkalinity, ammonia-N, bacteria, BOD, conductivity, organic Kjeldahl Nitrogen, nitrite+nitrate-N, phosphorus, pH, total suspended solids.

ENVIRONMENTAL RESEARCH/INVESTIGATION

Helping to quantify today's environmental toxins by specialized equipment:

- TRACE METALS
- PESTICIDES

DRINKING WATER PROVIDERS
SMALL DISTRIBUTION SYSTEMS (CITIES, RESTAURANTS, MOBILE HOME PARKS, ETC)

W33 and W35 Required.
(some providers do their own W33 testing)

RECREATIONAL WATER

W39 *E. coli* (non-regulatory)
collected only once

W36 or W37 Fecal Coliform (regulatory)
4 consecutive weeks immediately prior to season.

HOUSEHOLD WELL WATER - DRINKING

EXPANDED WATER TEST (W2)
Designed to address common well water problems in Georgia such as corrosion, high levels of iron and manganese, saltwater intrusion, and nitrate from various sources. This test package should be done at least once before using a less inclusive test package such as W1.

BASIC WATER TEST (W1)
Only after a W-2 has been conducted. Annually.

TOTAL COLIFORM/*E. COLI* (W35)
annually

LEAD (W9)
If your house was built before 1985, pipes could contain lead solder which could leach into your drinking water. Initial + semi-annually.

WASTE WATER-PERMITTED/RESEARCH

Per permit requirements or per parameter of interest.

FISH PONDS

W1 recommended. Occasionally, if water quality is a concern, biological oxygen demand (W24), nitrate-N (W6), total phosphorus (W27), and ammonium-nitrogen (W8) maybe necessary.

C. BASIC, GA EXPANDED, AND OTHER TESTS

Test No.	Description			Fee ($)	Lab
W1	Basic Water Test			15.00	SPW
	pH and Hardness Phosphorus (P) Potassium (K) Calcium (Ca) Aluminum (Al)	Boron (B) Chromium (Cr) Copper (Cu) Cadmium (Cd) Iron (Fe)	Magnesium (Mg) Manganese (Mn) Molybdenum (Mo) Nickel (Ni) Silica (Si)	Sodium (Na) Zinc (Zn)	
W2	GA. Expanded Water Test *(required for water treatment design)* (W1-Basic, W-3 Anions, W11- Soluble Salts, & W18-Alkalinity) **Need 16 oz. (500 mL)**			50.00	SPW
W3	Anions (Ion chromatography technique)			25.00	SPW
	Chloride (Cl) Fluoride (F)	Nitrate (NO_3) Phosphate (PO_4)	Sulfate (SO_4)		
W4	Any single Anion (in **W3**)			10.00	SPW
W5	Any two Anions (in **W3**)			18.00	SPW
W6	Nitrate-N (NO_3-N) *****			10.00	SPW
W7	Nitrite-N (NO_2-N) *****			10.00	SPW
W8	Ammonium-Nitrogen (NH_4-N)			10.00	SPW

* For regulatory requirements, waters may be checked for NO_3+NO_2-N and NO_2-N. These samples have a short holding time (48h). Please contact the laboratory (706-542-5350) for timing of submission and for further assistance.

Test No.	Description	Fee ($)	Lab
W9	Lead (Pb) (sensitive to 2 ppb)	30.00	SPW
	A **first draw** water sample will be collected after a minimum of (6) hours, but not more than twelve (12) hours, period during which time there was no water usage prior to the sampling. The GA-EPD recommends that either early morning or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist. A kitchen or bathroom cold-water faucet is to be used for sampling. If the primary concern is the well pump, draw the water from as near the well head as possible. Place a quart container below the faucet and gently open the cold water tap. Completely fill. Transfer a portion to the 4 oz. (125 mL) sample bottle, tightly cap and place in the mailing tube. (Sample bottles and mailing tubes are provided by the Extension Storekeeper).		
W10	pH **only**	3.00	SPW
W11	Soluble Salts (Electrical Conductivity/Specific Conductance)	10.00	FEW
W14	Mercury (Hg)	40.00	TLA
	For arsenic, selenium, and other metals requiring low level analysis, please refer to page 39 (W41-W43) – Trace Level Analysis		
W17	Kjeldahl Nitrogen	20.00	FEW
W18	Alkalinity (bicarbonate), pH, and CO_2 **(250 mL required**)	12.00	FEW
W19	Acidity	18.00	FEW
W20	Total Dissolved Solids (TDS)	15.00	FEW
W21	Total Suspended Solids (TSS)	15.00	FEW
W22	Total Solids (TS)	12.00	FEW
W23	Total Volatile Solids (TVS) and Total Solids (TS)	17.00	FEW

Test No.	Description	Fee ($)	Lab
W24	Biochemical Oxygen Demand (BOD)	30.00	FEW
	CALL FOR SCHEDULING Wednesday & Thursday 8:00 AM – 5:00 PM Friday 8:00 AM – 12:00 PM **Note:** *If you have more than one BOD sample and we are not familiar with those samples, please bring in Wednesday or Thursday. Additional tests are required.*		
W25	Chemical Oxygen Demand (COD)	18.00	FEW
W26	Oil & Grease non-petroleum Submit a **1- Liter** sample in a dedicated glass container. Water should be chilled until delivered to the lab.	25.00	FEW
W27	**Phosphorus (P)** (sensitive to 0.1 ppm)		
	A. Total (Persulfate Digestion)	22.00	FEW
	B. Dissolved Reactive (filtered, undigested)	16.00	FEW
	C. Total Reactive (unfiltered, undigested)	14.00	FEW
W28	Phenol	40.00	PHW
W29	Cyanide	40.00	PHW
W30	Color – 48-h holding time, **ship overnight or drop off** **(125 mL required)**	15.00	FEW
W31	Turbidity – 48-h holding time, **ship overnight or drop off** **(125 mL required)**	14.00	FEW
W32	Total Nitrate (NO_3) + Nitrite (NO_2) as N	10.00	SPW
W33	GA –Certification for Drinking Water Providers (Small Distribution Systems) (W1, W3, W7, W11, W18, W20, W30, W31, W32) **1 Quart** in plastic container, **ship overnight or drop off**)	110.00	SPW

1. Georgia Expanded Water Test Package

In a review and summary of the AESL water testing results from 1992 through 2000, the most common recurring domestic water quality problem was low pH and high iron levels. Approximately 30% of the wells tested had pH values below the recommended level of 6.5 and 17% with iron above 0.3 ppm. In conjunction with low pH, 494 samples had copper levels above 1.0 ppm and these elevated levels result from corrosion caused by these acid waters. To accurately predict the corrosion caused by water, more testing information is needed than is contained in the W1 test package. The corrosive ability of water is a function of pH, alkalinity, specific conductance (estimated dissolved solids), and calcium. A Saturation Index can be calculated using these parameters and used to predict corrosion and scaling (Table 2.). Therefore, we are offering an expanded water test package that contains all the tests needed to predict corrosion. Other tests are included that provide information needed to design an appropriate water treatment system.

TABLE 2. **Saturation Index Values and Recommended Treatment**

Saturation Index	Description	General Recommendations
- 5.00	Severe Corrosion	Treatment Recommended
- 4.00	Moderate Corrosion	Treatment Recommended
- 3.00	Moderate Corrosion	Treatment Recommended
- 2.00	Moderate Corrosion	Treatment Should be Considered
- 1.00	Mild Corrosion	Treatment Should be Considered
- 0.50	Mild Corrosion	Treatment Probably Not Needed
0.00	Balanced	Treatment Typically Not Needed
0.50	Some Faint Coating	Treatment Typically Not Needed
1.00	Mild Scale Forming	Some Aesthetic Problems
2.00	Mild Scale Forming	Some Aesthetic - Consider
3.00	Moderate Scale Forming	Treatment Should be Considered
4.00	Severe Scale Forming	Treatment Probably Required
5.00	Severe Scale Forming	Treatment Required

D. TRACE LEVEL ANALYSIS

Test No.	Description				Fee ($)	Lab
W41	Priority Pollutants By ICP-AVOES (EPA 200.5)	Antimony (Sb)	Chromium (Cr)	Selenium (Se)	140.00	TLA
		Arsenic (As)	Copper (Cu)	Silver (Ag)		
		Beryllium (Be)	Lead (Pb)	Thallium (Tl)		
		Cadmium (Cd)	Nickel (Ni)	Zinc (Zn)		
W42	Any **one**† of Available Metals and/or Non-Metals by ICP-AVOES (EPA 200.7, 200.5)	Aluminum (Al)	Copper (Cu)	Selenium (Se)	30.00	TLA
		Antimony (Sb)	Gold* (Au)	Silicon (Si)		
		Arsenic (As)	Iron (Fe)	Silver (Ag)		
		Barium (Ba)	Lead (Pb)	Sodium (Na)		
		Beryllium (Be)	Magnesium (Mg)	Strontium (Sr)		
		Bismuth (Bi)	Manganese (Mn)	Thallium (Tl)		
		Boron (B)	Molybdenum (Mo)	Tin (Sn)		
		Cadmium (Cd)	Nickel (Ni)	Titanium (Ti)		
		Calcium (Ca)	Palladium* (Pd)	Uranium (U)		
		Chromium (Cr)	Phosphorus (P)	Vanadium (V)		
		Cobalt (Co)	Potassium (K)	Zinc (Zn)		
W43	Two elements from **W42**				40.00	TLA

* Analytes not listed in EPA 200.7 or 200.5.

† Additional elements (> 2) from W42 are $10.00 each. Digestion will be $10.00 per sample when applicable.

E. MICROBIOLOGY OF WATER SAMPLES

- The lab **must receive** these samples **within 24 hours** following sample collection. Sterile sample containers must be obtained from the Feed & Environmental Water Lab and water must be collected directly into these containers, other containers will not be accepted for testing.

- Submission forms and instructions for collecting drinking, recreational, or irrigation water samples are provided at AESL's website (http://aesl.ces.uga.edu/forms).

- See sampling instructions on pages 41-42.

NOTE: Sample acceptance times are listed for each test below:

Test No.	Description	Fee ($)	Lab
W35	Total Coliform / *E. coli* (Colilert®) **(**Drinking Water, Irrigation Water, GAP Program – Please download appropriate forms at: http://aesl.ces.uga.edu/forms under Microbiological Forms. For EPD Compliance / Regulatory samples, please contact the lab for the appropriate submission form.) (Samples accepted Monday-Thursday 8:00am - 4:00pm)	30.00	FEW
W36	Fecal Coliform (by membrane filtration) (Samples accepted Monday-Thursday 8:00am - 2:00pm)	33.00	FEW
W37	Fecal Coliform (multiple tube fermentation / A1 Media) (Monday-Thursday 8:00am - 1:00pm)	30.00	FEW
W38	Heterotrophic Plate Count, (Idexx SimPlate®) (Samples accepted Monday-Wednesday 8:00am - 2:00pm)	30.00	FEW
W39	*E. coli* only (recreational; swimming) (Samples accepted Monday-Thursday 8:00am - 4:00pm)	30.00	FEW
W40	Enterococcus / Fecal Streptococcus (Please contact the lab two weeks before sample submission. This advance notice will allow the lab to order and prepare the microbiological media.)	30.00	FEW

1. SAMPLING INSTRUCTIONS: *Escherichia coli (E. coli)* in Drinking Water

1. **Samples are accepted for analysis on Monday through Thursday from 8:00 a.m. to 4:00 p.m.** and the fee for analysis is $40.00, including a next-day shipping label. If shipping is not needed, the fee is $30.00 for the laboratory test. Please make checks out to UGA - FEW Lab.

2. Samples must be accepted for analysis **within 24 hours of the collection time.** Therefore, plan ahead by pre-selecting a day and time to collect your sample that will allow for shipping or travel time.

3. If you have shock chlorinated your well, you must wait until the chlorine has dissipated before collecting sample.

4. Choose an inside faucet that is clean and not leaking.

5. Remove any faucet attachments such as filters, aerators, screens, splashguards or water-saver valves.

6. Sanitize the faucet inside and out by dipping the faucet neck into undiluted chlorine bleach (do not use color-safe bleach).

7. Open tap fully and flush the faucet and pipes by running water for 3 minutes. If sampling from a faucet that mixes hot and cold water, run hot water for 3 minutes, then cold water for 3 minutes.

8. At the end of step #7, reduce the flow to avoid splashing, uncap the sample bottle without touching the inside of the cap or bottle, fill the bottle above the 100-ml line but not completely full (Fill the bottle only once; do not rinse.), and recap tightly.

9. Place sample in the sample box, seal sample box, affix UPS shipping label and call UPS at 800-742-5877 to determine your local pick-up/drop off place and time for "Next Day Air" packages. Or hand deliver to the Ag. Services Laboratory, 2300 College Station Road, Athens.

2. SAMPLING INSTRUCTIONS: *Escherichia coli (E. coli)* in Recreational Water

1. **Samples are accepted for analysis on Monday through Thursday from 8:00 a.m. to 4:00 p.m**. and the fee for analysis is $40.00, including a next-day shipping label. If shipping is not needed, the fee is $30.00 for the laboratory test. Please make checks out to UGA - FEW Lab.

2. Samples **must be accepted for analysis within 24 hours of the collection time.** Therefore, plan ahead by pre-selecting a day and time to collect your sample that will allow for shipping or travel time.

3. Completely fill out the information requested on the opposite side of the form. *Essential info. must be completed for sample to be accepted.

4. Select the appropriate sampling area needed to obtain a representative sample for the recreational use of the water. If help is needed making this choice, please contact Dr. Uttam Saha at 706-542-7690.

5. Uncap the sample bottle without touching the inside of the cap or bottle, collect the water sample by holding the bottle near its base in the hand and plunging it, neck downward, below the surface. Turn bottle until neck points slightly upward and mouth is directed toward the current. If there is no current, create a current artificially by pushing bottle forward les horizontally in a direction away from the hand. Collect the sample approximately 1ft below the water surface.

6. The white substance in the bottle is a dechlorinating agent. Please do not rinse the bottle out.

7. It is best to take samples during a range of environmental and climatic conditions, especially during times when maximal pollution occurs.

8. Place sample in the sample box, seal sample box, affix UPS shipping label and call UPS at 800-742-5877 to determine your local pick-up/drop off place and time for "Next Day Air" packages. Or hand deliver to the FEW Laboratory, 2300 College Station Road, Athens, GA 30602.

F. PESTICIDE ANALYSIS

(1 - Quart Minimum) Quart size amber bottles, G(A), with teflon-lined caps are available from the Pesticide & Hazardous Waste Laboratory or a new quart Mason jar with aluminum foil under the cap may be substituted.

Test No.	Description	Fee ($)	Lab
W45	Chlorinated Hydrocarbon & Organic Phosphate Insecticide (Screen)	$100.00	PHW
	Aldrin, Chlordane, DDD, DDE, DDT, Dieldrin, Endrin, Ethion, Heptachlor, Heptachlor Epoxide, Lindane, Malathion, Methoxychlor, Methyl Parathion, Mirex, Parathion, PCB 1242, PCB 1254, PCB 1260, Toxaphene		
W46	Herbicide Analysis in Water	$100.00	PHW
	Atrazine, Balan, Bromacil, Devrinol, Dual, Eptam, Goal, Hexazinone, Lasso, Ordram, Oxadiazon, Paarlan, Propachlor, Propazine, Prowl, Roneet, Sencor, Simazine, Sutan, Terbacil, Tilam, Tolban, Treflan, Vernam		
W47	Phenoxyherbicide Analysis in Water	$100.00	PHW
	2, 4-D, 2, 4, 5-T, Silvex, 2,4-DB, Dicamba, Picloram		
W48	Termitacides	$100.00	PHW
	Dursban, Chlordane, Pydrin, Cypermethrin, Bifenthrin, Permethrin		

NOTE: Other insecticide, herbicide, pesticide and termitacide analyses are available upon request. Other analyses such as Volatile Organic Analysis (VOAs) and Diesel Range Organic (DRO) are available upon request.
Normal analysis time is approximately two (2) weeks.

VII

FEED AND FORAGE

A. GENERAL INFORMATION

- Taking a representative sample is the most important step in assuring quality analyses. Please follow sampling procedures given on pages 49-51 of this section.

- Supply complete information on the sample submission form to ensure maximum usefulness to the client. The **animal** and **feed type** must be given if you want calculations for total digestible nutrients (TDN) or net energies.

- For total mixed rations, concentrates, vitamin/mineral blends, grains and by-products, collect multiple core samples or grab samples. Composite the cores or grab samples, mix thoroughly, and sub-sample into **quart** Ziploc®bag.

- Submit hays and silages in a **gallon** Ziploc® bag.

B. FEED AND FORAGE ANALYSIS

Test No.	Description		Fee ($)	Lab
F1	Hays and Silage (NIR + nitrate + minerals)		32.00	FEW
	Moisture Neutral Detergent Fiber (NDF) Acid Detergent Fiber (ADF) Crude Fiber (estimated)	Crude Protein Lignin Nitrate (NO_3) Total Digestible Nutrients (TDN)	Relative Forage Quality (RFQ) 10 Minerals (see **F26**)	
F2	Hays and Silage (NIR + nitrate, excluding minerals)		15.00	FEW
	Moisture Neutral Detergent Fiber (NDF) Acid Detergent Fiber (ADF) Crude Fiber (estimated)	Crude Protein Lignin Nitrate (NO_3) Total Digestible Nutrients (TDN)	Relative Forage Quality (RFQ)	
F3	Hays and Silage (NIR only)		12.00	FEW
	Moisture Neutral Detergent Fiber (NDF) Acid Detergent Fiber (ADF) Crude Fiber (estimated)	Crude Protein Lignin Total Digestible Nutrients (TDN) Relative Forage Quality (RFQ)		
F4	Hays and Silages (Wet Chemistry) includes nitrate and minerals		48.00	FEW
	Moisture Neutral Detergent Fiber (NDF) Crude Fiber (estimated)	Crude Protein Nitrate (NO_3) Total Digestible Nutrients (TDN)	10 Minerals (see **F26**)	
F5	Hays & Silages (Wet Chemistry) includes nitrate but excludes minerals		31.00	FEW
	Moisture Neutral Detergent Fiber (NDF) Crude Fiber (estimated)	Crude Protein Nitrate (NO_3) Total Digestible Nutrients (TDN)		
F6	Hays and Silages (Wet Chemistry) excludes both nitrate and minerals		28.00	FEW
	Moisture Neutral Detergent Fiber (NDF) Crude Fiber (estimated)	Crude Protein Total Digestible Nutrients (TDN)		

Test No.	Description	Fee ($)	Lab
F7	All Other Feeds	35.00	FEW
	Moisture Crude Fiber Protein Total Digestible Nutrients (TDN) 10 Minerals (see **F26**)		
F8	Moisture, Crude Fiber, Protein, Crude Fat, Ash, and Total Digestible Nutrients (TDN)	40.00	FEW
F9	Moisture, Crude Fiber, Protein, Total Digestible Nutrients (TDN)	28.00	FEW
F10	Crude Protein (Combustion Technique)	12.00	FEW
F11	Crude Fiber	15.00	FEW
F12	NDF (Neutral Detergent Fiber)	13.00	FEW
F13	ADF (Acid Detergent Fiber)	13.00	FEW
F14	Nitrate (NO_3)	10.00	FEW
F15	Crude Fat	15.00	FEW
F15A	F7 (all other feeds) + F15 (crude fat)	40.00	FEW
F16	Bound Protein	20.00	FEW
F17	Ash	10.00	FEW
F18	Moisture	12.00	FEW
F19	Mineral pre-Mixes	30.00	FEW
F20	pH	5.00	FEW

Test No.	Description	Fee ($)	Lab
F22	Calorimetry/Gross Energy (BTU)	25.00	FEW
F23	Total Aflatoxin	35.00	FEW
F24	Protein Solubility (soybean Meal)	25.00	FEW
F25	Cyanide (Prussic Acid)	50.00	FEW
F26	Minerals only	20.00	FEW
	Phosphorus (P) Magnesium (Mg) Aluminum (Al) Sodium (Na) Potassium (K) Manganese (Mn) Copper (Cu) Calcium (Ca) Iron (Fe) Zinc (Zn)		
F27	Salt/Chloride by Quantab.	14.00	SPW
	For arsenic, selenium, and other metals requiring low level analysis, please refer to page 48 (F41-F43) – Trace Level Analysis		
F31	Lignin	20.00	FEW
F32	Chlorinated Hydrocarbon & Organophosphate Insecticide Screen for Feed & Feed Ingredients	100.00	PHW
	Aldrin Ethion Mirex DDT Chlordane Heptachlor Parathion Dieldrin DDD Heptachlor Epoxide PCB 1242 Endrin DDE Lindane PCB 1254 Methoxychlor Toxaphene Malathion PCB 1260 Methyl Parathion		

C. TRACE LEVEL ANALYSIS

Test No.	Description				Fee ($)	Lab
F41	Priority Pollutants By ICP-AVOES (EPA 200.5)	Antimony (Sb)	Chromium (Cr)	Selenium (Se)	150.00	TLA
		Arsenic (As)	Copper (Cu)	Silver (Ag)		
		Beryllium (Be)	Lead (Pb)	Thallium (Tl)		
		Cadmium (Cd)	Nickel (Ni)	Zinc (Zn)		
F42	Any **one**† of Available Metals and/or Non-Metals by ICP-AVOES	Aluminum (Al)	Copper (Cu)	Selenium (Se)	40.00	TLA
		Antimony (Sb)	Gold* (Au)	Silicon (Si)		
		Arsenic (As)	Iron (Fe)	Silver (Ag)		
		Barium (Ba)	Lead (Pb)	Sodium (Na)		
		Beryllium (Be)	Magnesium (Mg)	Strontium (Sr)		
		Bismuth (Bi)	Manganese (Mn)	Thallium (Tl)		
		Boron (B)	Molybdenum (Mo)	Tin (Sn)		
		Cadmium (Cd)	Nickel (Ni)	Titanium (Ti)		
		Calcium (Ca)	Palladium* (Pd)	Uranium (U)		
		Chromium (Cr)	Phosphorus (P)	Vanadium (V)		
		Cobalt (Co)	Potassium (K)	Zinc (Zn)		
F43	Two elements from **F42**				50.00	TLA

† Additional elements (> 2) from F42 are $10.00 each.

D. TAKING A GOOD FORAGE SAMPLE

Adapted from a procedure published by the National Forage Testing Association
http://www.foragetesting.org/lab_procedure/appendix/appendixE.htm

Introduction

Sampling is a major factor affecting the accuracy of forage quality analyses. Chemical analysis is valid only to the extent that the sample analyzed represents the lot of hay or haylage to be fed.

Forage Lots

Take samples by "lots" of hay or silage. A "lot" is defined as hay or silage, which has been made from the same cutting, field, and stage of maturity. A sample should not represent more than 200 tons dry matter. For lots larger than 200 tons, two or more samples should be taken and the average of the results used to represent the lot.

Sampling Equipment

The most commonly used sampling method for baled or stacked hay employs a hollow tube (probe) to extract core samples from the hay. Use a probe that travels at least 12 to 18 inches into the hay package for most hay packages. The internal diameter of the probe should be at least 3/8 of an inch. Probes with sharpened tips must be kept sharp to cut through hay. A dull tip may reduce the amount of stem material in the sample due to the tip sliding past rather than cutting through the stems.

Sampling Hay and Haylage

Baled Hay

Baled hay packages are not uniform products because the initial windrows were not uniform and the baling process affects the distribution of leaves and stems (bale structure) within the bale. Based on the structure of the hay package to be sampled, the hay should be probed in such a way as to adequately sample the various concentrations of stems and leaves. At least 20 cores (one core per bale) should be taken, combined, and mixed well to develop one sample per lot. Bales within a lot of hay should be sampled at random. Random means that there should be no pre-chosen reason for selecting a specific bale to sample (i.e., location, color, leafiness, etc.). Techniques to guard against non-random sampling are to sample every fourth or fifth bale going around the stack, truck, or down the row in the field or take at least five random samples from each of the four sides of a stack.

Sample rectangular bales, regardless of size, using a probe centered in the end of a bale and drill horizontally into the bale.

Sample round bales by drilling horizontally into the curved side of the bale. Deteriorated hay from the exterior of the bale should not be sampled if it will not be fed to animals or they can be selective in their feeding. However, if hay to be sold includes the deteriorated exterior, it should be included in the sampling. Bales stored outside should be sampled within 2 to 4 weeks of feeding so that continued deterioration does not significantly lower bale quality from the sample taken for analysis.

Stacked Hay

For loose hay use a probe at least 30 inches long with 3/4 inch or larger internal diameter and drill at an angle from the side of the stack to the probe's full depth in 20 random locations throughout the stack. In a mow, hold the probe vertically and drill at the spot where the hay is compressed by the weight of the operator. Discard any weather damaged surface layer that would not be included in the part being fed or sold. Hay stored outside should be sampled within 2 to 4 weeks of feeding so that continued deterioration does not significantly lower bale quality from the sample taken for analysis.

Cubes and Pellets

Hay cubes or pellets should be sampled by collecting several hay cubes or handfuls of pellets from 15 to 20 locations in each "lot" so that a minimum of 40 cubes or 2 lb of pellets are selected. Each lot should be limited to 200 tons or less.

Silage

Silage. Collect a 1- to 2-lb sample from the silo unloader while it is operating or a comparable amount from several sites in a bunker or silo tube. Do not collect a silage sample until at least two weeks after ensiling. Do not collect a silage sample from the top 2 to 3 feet in a top-loading upright silo. Avoid sampling from moldy or spoiled areas in silo, bunker or tube. Also, avoid sampling silage that has been exposed to the air for several hr. Sample bunker silos by sampling 12 to 15 sites from the face of the silage in the silo.

Sampling chopped forage as it is being put into the silo will give an indication of forage quality but will not account for changes occurring during the ensiling process. Fiber changes are usually less than 1 unit and occur primarily because digestible material is lost through respiration or juices leaching out. Protein content and solubility can change significantly during the ensiling process depending on the fermentation process.

Mixed Rations

Total Mixed Rations (TMR). Total mixed rations are difficult to sample because they are seldom homogeneous or well mixed. When it is unlikely that a sampling method can produce a representative sample, it is recommended that the components of total mixed rations be sampled and analyzed individually. When confident that a representative sample can be obtained, a TMR sample may be analyzed by wet chemistry. NIR calibration on TMR samples has not been successful.

Special Sample Handling

Sampling silages, haylages and total mixed rations may produce a large amount of sample. The sample should not be divided because stems and leaves will separate and settle in the sample. The sample should be taken early in the week, placed in a polyethylene, airtight (e.g. freezer) bag, sealed tightly and immediately mailed or delivered to the laboratory. Perishable samples should be mailed immediately after collection and should be mailed early in the week so they arrive at the laboratory without spending the weekend in shipment. Samples except for those intended for prussic acid testing can be frozen before shipment.

Record Keeping

It is recommended to keep records of information about each lot of forage that is sampled and analyzed. These records should contain information about the source (area where grown), forage type (species), cutting number, stage of maturity, and special conditions (frost, drought, etc.). Further information such as cutting date and interval between cuttings may also helpful when managing your forage quality.

VIII

ANIMAL WASTES

A. GENERAL INFORMATION

Sample Submission

- A representative sample of the material should be submitted as close as possible to the time of application.
- Samples should be placed in pint size Ziploc® bags (solid sample) or plastic bottles (liquid sample).
- Glass containers are not acceptable because they may break in shipment.
- Properly seal lid using tape to avoid sample leakage during transit. Use adequate packing.
- Enclose Animal Waste Submission Form (see submission form section). Do not staple forms to Ziploc® bag.
- Bottles are available upon request from Extension Storekeeper:

Storekeeper Cooperative Extension
The University of Georgia
Room 103, Hoke Smith Annex
Athens, GA 30602
Ph: 706-542-8844

Pint size Ziploc® bag for solid sample.

Pint size wide mouth plastic bottle for liquid sample.

Poultry Litter Analysis

Since April 2000, the Total Minerals Test (A-1) has been provided free of charge to Georgia Poultry Producers who submit poultry litter through their county extension program. Litter testing is an integral part of the Georgia Poultry industry program of voluntary comprehensive nutrient management plans (CNMPs) that call for both soil and litter/manure testing. Funds have been appropriated by the Georgia General Assembly to support the free litter- testing program. Only the A-1 test is free; charges still apply for other tests on poultry litter.

To qualify for the free test, samples need to be submitted through Data Transfer's Online Submission procedure. In order to use the online submission successfully, all fields in the submission form will need to be filled out. This will require that the grower provides the information requested. To facilitate submission, the programmed on-line submission form has drop-down boxes that will make filling out the form much easier. The information on the form will serve as a valuable contribution to our ongoing database for long term nutrient management planning.

B. ANIMAL WASTE ANALYSIS

Test No.	Description	Fee ($)	Lab
A1	Total Minerals + Total Nitrogen	42.00	SPW
	Total Nitrogen – Kjeldahl for manure and lagoon; dry combustion for poultry litter		
	Phosphorus (P) Potassium (K) Calcium (Ca) Magnesium (Mg) Iron (Fe) Aluminum (Al) Sulfur (S) Manganese (Mn) Boron (B) Copper (Cu) Zinc (Zn) Sodium (Na)		
A2	Kjeldahl Nitrogen	20.00	FEW
A3	Nitrate-Nitrogen (NO_3-N) (**important for lagoons**)	12.00	FEW
A4	Ammonium-Nitrogen (NH_4-N) (required for organic nitrogen calculation)	12.00	FEW
A5	Moisture	10.00	SPW
	RECOMMENDED TESTS		
	Poultry Litter = A1 (1 pint Ziploc® bag)		
A6	**Manure** — **A1 + A3** (1 pint sample)	50.00	SPW
A7	**Lagoon** — **A1 + A3 + A4** (1 pint sample)	55.00	SPW

C. MANURE SAMPLING AND TESTING

Manures can be quite variable in nutrient content. This variability may be due to different animal species, feed composition, bedding material, storage and handling as well as other factors. Testing at or near the time of application tells you the fertilizer value to make decisions about rates to apply. Some livestock producers are faced with nutrient management regulations that require manure testing. Also, if buying or selling litter/manure for fertilizer use, testing will help both buyer and seller establish the fertilizer value.

Manure Sample Collection

According to the Georgia Environmental Protection Division (EPD) "Swine Feeding Operation Permit Requirements," lagoon effluent is to be sampled semiannually. Preferably, the sample should be taken as near the application time as possible prior to the manure application. However, if it is urgent to pump down a full lagoon or storage pond, you should not wait until you can sample and obtain the results. You should sample the day of irrigation. The results can later be used to determine the nutrients applied to the fields and identify the need for additional nutrients to complete crop production.

Manures should be sampled and tested near the time of application because the nutrient content can change considerably over time, particularly if stockpiled and unprotected from the weather. Nitrogen (N) is the nutrient that is the most likely to be affected. The frequency for testing your manure will depend upon several factors, but, as noted above, lagoon effluent needs to be tested at least semiannually. The type of manure and overall management system will also be factors. Animal producers using lagoon manure storage systems should sample every time that the liquid or slurry will be pumped and applied to the land. Proper sampling is the key to reliable manure analysis. Although laboratory procedures are accurate, they have little value if the sample fails to represent the manure product. Manure samples submitted to a laboratory should represent the average composition of the material that will be applied to the field. Reliable samples typically consist of material collected from a number of locations. Precise sampling methods vary according to the type of manure. The laboratory, County Extension Agent, or crop consultant should have specific instructions on sampling.

Liquid Manure

Liquid manure samples submitted for analysis should meet the following requirements:

- Place sample in a sealed, clean plastic container with about a 1-pint volume. Glass is not suitable because it is breakable and may contain contaminants.
- Leave at least 1 inch of air space in the plastic container to allow for expansion caused by the release of gas from the manure material.
- Refrigerate or freeze samples that cannot be shipped on the day they are collected. This will minimize chemical reactions and pressure buildup from gases.

Ideally, liquid manure should be sampled after it is thoroughly mixed. Because this is sometimes impractical, samples can also be taken in accordance with the suggestions that follow.

Lagoon effluent: Premixing the surface liquid in the lagoon is not needed, provided it is the only component that is being pumped. Growers with multistage systems should draw samples from the lagoon they intend to pump for crop irrigation.

Samples should be collected using a clean, plastic container similar to the one shown in Figure 1. One pint of material should be taken from at least eight sites around the lagoon and then mixed in the larger clean, plastic container. Effluent should be collected at least 6 feet from the edge of the lagoon at a depth of about a foot. Shallower samples from anaerobic lagoons may be less representative than deep samples because oxygen transfer near the surface sometimes alters the chemistry of the solution. Floating debris and scum should be avoided. One pint of the mixed material should be sent to the laboratory. Galvanized containers should never be used for collection, mixing, or storage due to the risk of contamination from metals like zinc in the container.

Liquid slurry: Manure slurries that are applied from a pit or storage pond should be mixed prior to sampling. If you agitate your pit or basin prior to sampling, a sampling device pictured in Figure 1 can be used. If you wish to sample a storage structure without agitation, you must use a composite sampling device as shown in Figure 2. Manure should be collected from approximately eight areas around the pit or pond and mixed thoroughly in a clean, plastic container. An 8- to 10-foot section of 0.5- to 0.75-inch plastic pipe can also be used: extend the pipe into the pit with ball plug open, pull up the ball plug (or press your thumb over the end to form an air lock), and remove the pipe from the manure, releasing the air lock to deposit the manure into the plastic container.

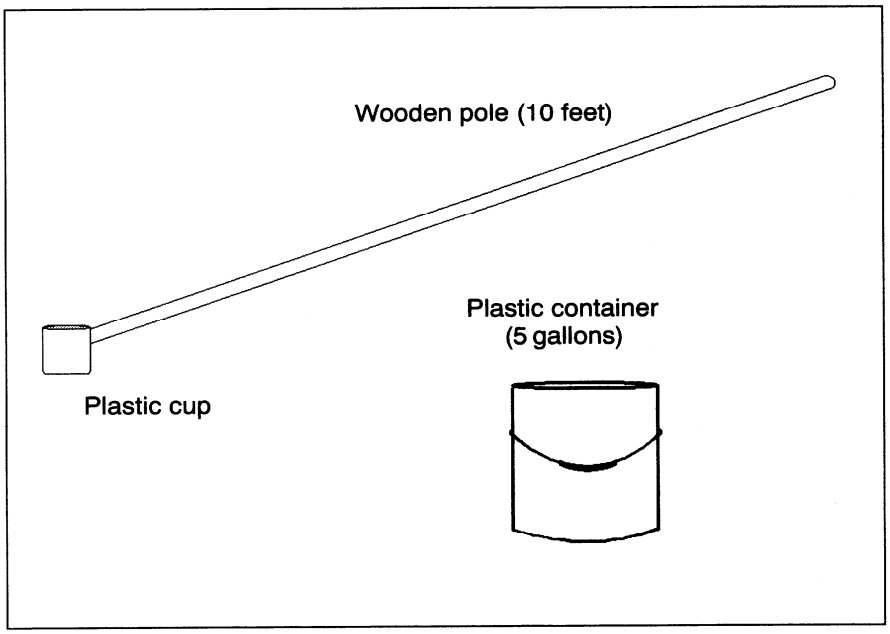


Figure 1. Liquid manure sampling device

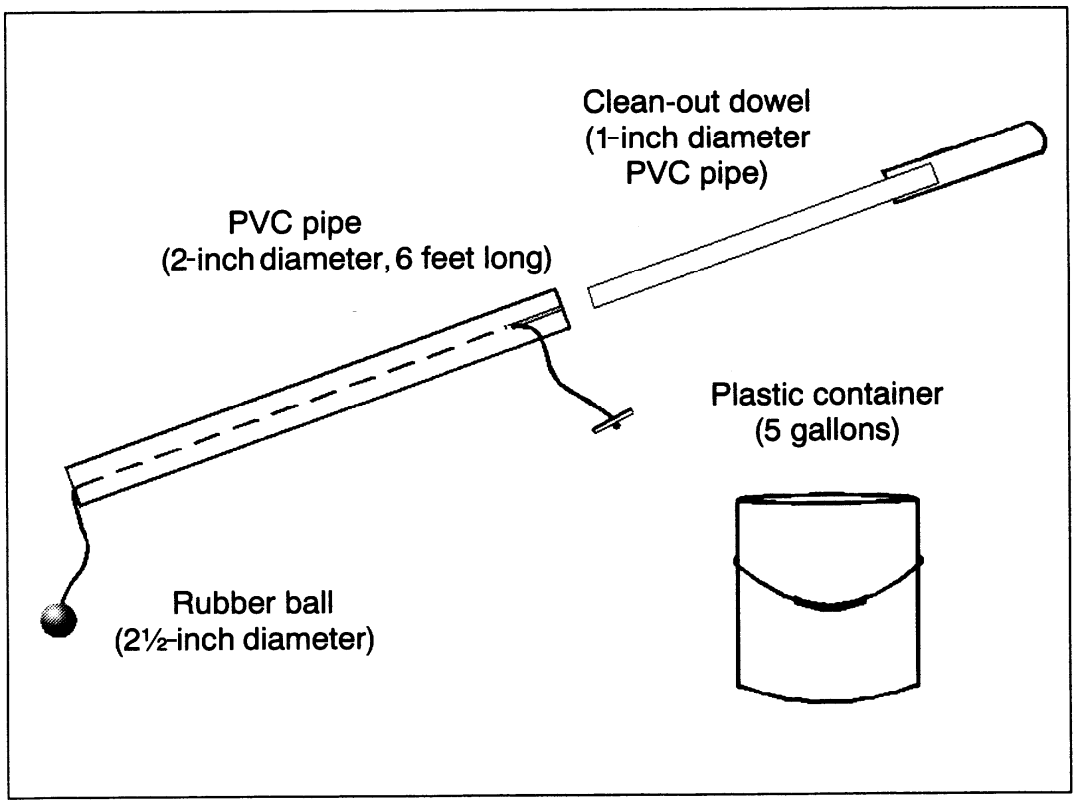


Figure 2. Composite sampling device

Lagoon sludge: Representative samples of lagoon sludge are more difficult to obtain than samples with lower solid contents. Two common methods are used. One method requires lagoon pump-down to the sludge layers. Then, during sludge agitation, a liquid or slurry type of sample described above may be collected. The other method requires insertion of a probe into the lagoon to the bottom to obtain a column of material. A "sludge-judge" is a device commonly used for this type of sampling. The sludge component of this column is then released into a clean plastic bucket, and several (12-20) other sampling points around the lagoon are likewise collected to obtain a composite, representative sample. This procedure must be performed with a boat or mobile floating dock.

For analysis, most laboratories require at least 1 pint of material in a plastic container. The sample should not be rinsed into the container because doing so dilutes the mixture and distorts nutrient evaluations. However, if water is typically added to the manure prior to land application, a proportionate quantity of water should be added to the sample.

Solid Manure

Solid manure samples should represent the average moisture content of the manure. A one-quart sample is adequate for analysis. Samples should be taken from approximately eight different areas in the manure pile, placed in a clean, plastic container, and thoroughly mixed. Approximately one quart of the mixed sample should be placed in a plastic bag, sealed, and shipped directly to the laboratory. Samples stored for more than two days should be refrigerated. Figure 3 shows a device for sampling solid manure.

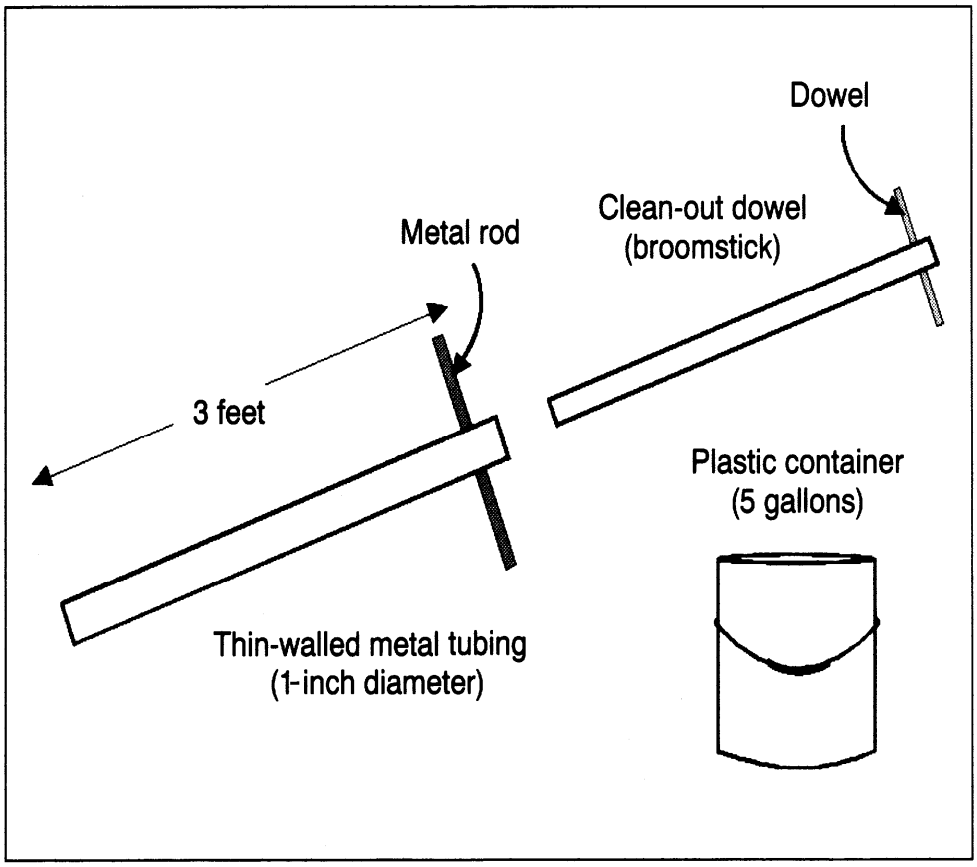


Figure 3. Solid manure sampling device

Stockpiled manure or litter: Ideally, stockpiled manure and litter should be stored under cover on an impervious surface. The weathered exterior of uncovered waste may not accurately represent the majority of the material. Rainfall generally moves water-soluble nutrients down into the pile. If an unprotected stockpile is used over an extended period, it should be sampled before each application.

Stockpiled manure should be sampled at a depth of at least 18 inches at six or more locations. The collected material should be combined in a plastic container and mixed thoroughly. The one-quart laboratory sample should be taken from this mixture, placed in a plastic bag, sealed, and shipped to the laboratory for analysis. If the sample cannot be shipped within one day of sampling, it should be refrigerated.

Surface-scraped manure: Surface-scraped and piled materials should be treated like stockpiled manure. Follow the same procedures for taking samples. Ideally, surface-scraped materials should be protected from the weather unless they are used immediately.

Composted manure: Ideally, composted manure should be stored under cover on an impervious surface. Although nutrients are somewhat stabilized in these materials, some nutrients can leach out during rains. When compost is left unprotected, samples should be submitted to the laboratory each time the material is applied. Sampling procedures are the same as those described for stockpiled waste.

In-house Litter: Litter in the poultry house can vary considerably depending on location within the house. Litter around watering systems, feeders, and brooders should be sampled proportionate to the entire house floor. Special attention should be given to sampling in-house litter by making every effort to representatively sample the entire volume of litter that will be cleaned out and land applied. Collect at least 10 to 12 one-pint samples throughout the house and combine these samples into a plastic bucket. Take care to sample the entire depth of litter without including soil from the house floor. After thoroughly mixing the individual samples in the bucket, place approximately one quart of this mixture into a plastic bag or plastic wide-mouth jar.

Manure Tests to Request

The County Extension Office has sample submission forms and information on tests that are most often needed and can assist with shipping samples to the University of Georgia (UGA) Ag and Environmental Services Laboratories. The UGA manure sample submission forms are in the "Submission and Order Forms" section of this schedule. Poultry producers should use the Poultry Litter/Manure Submission Form for Nutrient Management Plans. All others should use Animal Waste Submission Form for Land Application.

Basic UGA manure test package: Your individual permits will dictate the frequency and kinds of testing. The basic manure test package at the UGA Agricultural and Environmental Services Laboratories includes: (all are as total elemental nutrient)

- Nitrogen (N)
- Phosphorus (P)
- Potassium (K)
- Calcium (Ca)
- Magnesium (Mg)
- Sodium (Na)
- Sulfur (S)
- Aluminum (Al)
- Iron (Fe)
- Boron (B)
- Copper (Cu)
- Manganese (Mn)
- Zinc (Zn).

Additional test on liquid manure for Comprehensive Nutrient Management Plan (CNMP): Lagoon effluent samples submitted for basic manure testing at the UGA Ag Services Labs will have additional analyses that include:

- Total Kjeldahl nitrogen (TKN)
- Ammonium nitrogen
- Nitrate nitrogen.

Manure Report

The UGA Ag and Environmental Services Laboratories reports results for solid manures in both percentages and pounds of nutrients per ton on an "as received" basis since this is how you will be applying the material. Liquid sample results are reported as parts per million (ppm) and converted into both pounds per 1,000 gallons and pounds per acre inch of application for your convenience in determining rates. The phosphorus and potassium are reported in the fertilizer basis as P_2O_5 and K_2O respectively. Other laboratories may report their results differently. If a lab reports phosphorus and potassium as elemental P or K, you must convert them into the fertilizer basis of P_2O_5 or K_2O. This can be done with the following conversions:

P multiplied by 2.29 = P_2O_5

K multiplied by 1.20 = K_2O

The amount of the total nutrients in manure that will be available to plants varies depending on the type of manure and whether it will be applied to the surface of the soil, incorporated or injected. County Extension Agents and other qualified professionals can assist with the calculation of manure nutrient availability based on when and how you will make application. This information, combined with the soil test report and other information, is necessary to develop a CNMP.

IX

BIOSOLIDS, SLUDGE, AND NON-ANIMAL WASTES

A. BIOSOLIDS, SLUDGE, & NON-ANIMAL WASTES ANALYSIS

Test No.	Description	Fee ($)	Lab
SC1	Total Minerals	30.00	SPW
	Phosphorus (P) Potassium (K) Calcium (Ca) Magnesium (Mg) Iron (Fe) Aluminum (Al) Sulfur (S) Manganese (Mn) Boron (B) Copper (Cu) Zinc (Zn) Sodium (Na) Silicon (Si) Cadmium (Cd) Chromium (Cr) Nickel (Ni) Lead (Pb) Molybdenum (Mo)		
SC2	Kjeldahl Nitrogen	20.00	FEW
SC3	Nitrate-Nitrogen (NO_3-N)	12.00	FEW
SC4	Ammonium-Nitrogen (NH_4-N)	12.00	FEW
SC4A	**SC3** (NO_3-N) + **SC4** (NH_4-N)	20.00	FEW
SC5	Moisture	10.00	FEW
	For arsenic, selenium, and other metals requiring low level analysis, please refer to page 62 (SC41-SC43) – Trace Level Analysis		
SC9	Mercury – **acid digestion**	40.00	FEW
SC10	Total Solids	12.00	FEW
SC11	Total Solids + Total Volatile Solids	17.00	FEW
SC12	pH	5.00	FEW

Test No.	Description	Fee ($)	Lab
SC13	(SC1, SC2, SC3, SC4, SC8, SC9, SC11, SC12) EPA 503 Compliance of Bio-Solids for Land Application		PHW
	SC13 - A "Chain of Custody" Document Required (See Web site for forms)	200.00	
	SC13 - B Compliance not required	185.00	
SC14	Fecal coliform - EPA 503 Compliance of Bio-Solids for Land Application		FEW
	SC14 - A "Chain of Custody" Document Required (See Web site for forms)	50.00	
	SC14 - B Compliance not required	35.00	
SC15	Total Carbon + Nitrogen + Sulfur (dry combustion)	24.00	SPW
SC16	Single Element (in Test **SC15**)	10.00	SPW
SC17	Any 2 Elements (in Test **SC15**)	18.00	SPW

B. TRACE LEVEL ANALYSIS

Test No.	Description				Fee ($)	Lab
SC41	Priority Pollutants By ICP-AVOES (EPA 200.5)	Antimony (Sb)	Chromium (Cr)	Selenium (Se)	150.00	TLA
		Arsenic (As)	Copper (Cu)	Silver (Ag)		
		Beryllium (Be)	Lead (Pb)	Thallium (Tl)		
		Cadmium (Cd)	Nickel (Ni)	Zinc (Zn)		
SC42	Any **one**† of Available Metals and/or Non-Metals by ICP-AVOES	Aluminum (Al)	Copper (Cu)	Selenium (Se)	40.00	TLA
		Antimony (Sb)	Gold* (Au)	Silicon (Si)		
		Arsenic (As)	Iron (Fe)	Silver (Ag)		
		Barium (Ba)	Lead (Pb)	Sodium (Na)		
		Beryllium (Be)	Magnesium (Mg)	Strontium (Sr)		
		Bismuth (Bi)	Manganese (Mn)	Thallium (Tl)		
		Boron (B)	Molybdenum (Mo)	Tin (Sn)		
		Cadmium (Cd)	Nickel (Ni)	Titanium (Ti)		
		Calcium (Ca)	Palladium* (Pd)	Uranium (U)		
		Chromium (Cr)	Phosphorus (P)	Vanadium (V)		
		Cobalt (Co)	Potassium (K)	Zinc (Zn)		
SC43	Two elements from **SC42**				50.00	TLA

† Additional elements (> 2) from SC42 are $10.00 each.

X

MISCELLANEOUS SAMPLES

MISCELLANEOUS ANALYSIS

Test No.	Description	Fee ($)	Lab
	LIMING MATERIALS		
M1	Calcium Carbonate Equivalent (CCE)	18.00	SPW
M2	Calcium + Magnesium (test for dolomitic limestone)	20.00	SPW
	PAINT CHIPS		
M3	Lead (Pb) in paint chips (5000 ppm indicates Pb-based paint)	30.00	SPW

SOIL

SOIL SUBMISSION FORM

SHOULD BE TYPED

DATE MAILED TO LABORATORY:_____ COUNTY CODE:_____ ☐ ROUTINE ☐ SPECIAL *(Paid)*

FOR LAB USE ONLY

SET I.D. _____
Login date: _____
Lab no. _____

	NAME Last	First	M.I.	Street City Zip	Sample No.	Crop Codes	Soil* Code
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

INSTRUCTIONS

1. **Please type all information - one entry per line. Only 12 samples per form. Sample Number cannot exceed 4 digits. Info on bag should match info on form.**
2. **Crop and County codes must be used. Multiple crop codes must be on the same line. See example below.**
3. **All samples listed on sheet should be enclosed in same box.**
4. **Group all of one grower's samples together in consecutive number order (see example below).**
5. **Enclose one copy with samples. Retain one copy for county records.**
6. **Enclose forms inside envelope and place inside box.**
7. **Samples for special analyses must be listed on a separate sheet.**
8. **When payment is required, send check (NO CASH) with a "Check Submission" form.**

EXAMPLE

Name	Address	Sample No.	Crop Code
Doe, John M.	3657 Rocky Road, Atlanta 30303	1	55
"	"	2	"
Smith,Mae F.	1524 Peach Dr., Atlanta 30078	1	95,96,97

The University of Georgia
College of Agricultural and Environmental Sciences
Cooperative Extension
1785
SOIL, PLANT, AND WATER LABORATORY
2400 College Station Road

Lab Use Only

LAB #: _____
Received by: _____
Date Received: _____
Date Returned: _____
Fee Received: _____

PLANT SUBMISSION FORM

Please Note – Retain a copy of this form for your files. Submit one copy per sample.

Grower

Name (Print) _____

Address: _____

_____

City: _____

State: _____ Zip Code: _____

County Agent: _____

County: _____

IMPORTANT

Samples should be placed in a 10"x13" paper envelope or a PAPER BAG, which is labeled with your name, address, the crop, and sample description.

Appearance of Plant

☐ Normal ☐ Abnormal (describe)

_____

_____

_____

Plant Diseases? ☐ YES ☐ NO

Insect Problem? ☐ YES ☐ NO

Was a soil sample taken from this same area for:
1. Soil Test ☐ YES ☐ NO

2. Nematode Assay ☐ YES ☐ NO

List any foliar fertilizers or fungicides sprayed on this crop: _____

Additional comments about samples:

TYPE OF SAMPLE

Crop: _____ Code: _____ Variety or Hybrid: _____

Sample No. _____ of _____ Date Planted: _____ Date Sampled: _____

Stage of Growth: ☐ Seedling ☐ Early Growth ☐ Bloom ☐ Fruiting ☐ Mature

Wheat: (Enter Growth Stage No.) _____ Plant Height: _____ Inches

IRRIGATION

YES ☐

NO ☐

(Notice: **Do not** send root portion. Leaves covered with dust or recently sprayed should be rinsed and air-dried before mailing.)

PLANT PART SAMPLED: (Check One)

Whole Plant ☐ Leaves ☐

Stems ☐ Top 6" ☐

Petioles ☐ Other: _____

* Check here if requesting single Petiole Analysis (Nitrate, Phosphorus, Potash).

P13 ☐

Position of Plant Leaf (Check One)

Corn		**Other Crops**	
Ear Leaf	☐	Upper	☐
Leaf Below Whorl	☐	Middle	☐
		Lower	☐

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Cooperative Extension
1785
SOIL, PLANT, AND WATER LABORATORY
2400 College Station Road

LAB# :
Received by:
Date and Time:

**** Lab Use Only ****

WATER SUBMISSION FORM

Please Note – Retain a copy of this form for your files. Submit one copy per sample.

SUBMITTING COUNTY*	**Name and sample location** *(if different from submitting county)*
COUNTY: _____	**Name:** _____
Name: _____	**County:** _____
Mailing Address: _____	**Street:** _____
City, State, Zip: _____	**City, State, Zip:** _____
Phone #: _____	**Date Received:** _____

***Note: Test results are sent to submitting county through data transfer.**

TYPE OF SAMPLE (Check One):

☐ **Household Well** ☐ **Irrigation Well** ☐ **Irrigation Pond** ☐ **Municipal Water** ☐ **Fish Pond**

IF THE WATER SOURCE IS WELL: **Other:** _____

Well Depth: _____ **ft.**

Well Casing Diameter: _____ **in.**

What is the end use of the water: _____

Briefly describe any problems and/or reasons for testing water: _____

TEST REQUESTED (Circle all that apply):

W1 - BASIC TEST **(Includes: pH, P, K , Ca, Mg, Mn, Fe, Al, B, Cu, Zn, Na, Cd, Ni, Cr, Mo, Si, Calculated Hardness)**

W7 - Nitrite (NO_2-N) **W6- Nitrate (NO_3-N)** **W9 - Lead (Pb)** **Other:** _____

W2 - GA Expanded Water Test **W33 - GA EPD Public Water Systems Review & Permitting Process**

FOR LAB USE ONLY

Payment Received: _____ **Date Returned:** _____

pH _____ **NO_2-N** _____ **NH_4-N** _____ **Pb** _____ **E.C.** _____

F _____ **Cl** _____ **NO_3-N** _____ **PO_4** _____ **SO_4** _____

Special Notes:

The University of Georgia
College of Agricultural and Environmental Sciences
Cooperative Extension Service

SOIL, PLANT, AND WATER LABORATORY
2400 College Station Road

LAB# _____
[Lab Use Only]

ANIMAL WASTE
SUBMISSION FORM FOR LAND APPLICATION

Please Note - Retain a copy of this form for your files. Submit one copy per sample.

Name: _____ **Sample #:** _____
Mailing address: _____ **County:** _____
City,State,Zip: _____
Phone #: _____ **Date Received:** _____

Check kind and Condition

	Kind	Condition
LITTER	**A** Broiler _____	**E** Fresh/Stackhouse _____
	B Layer _____	**F** Deep Stacked _____
	C Breeder _____	**G** Composted _____
	D Pullet _____	**D** Other _____
MANURE	**I** Dairy _____	
	J Swine _____	**N** Slurry _____
	K Beef _____	**O** Solid _____
	L Horse _____	**P** Composted _____
	M Other _____	
LAGOON	**Q** Swine _____	**S** Layer _____
	R Dairy _____	**T** Other _____

Application Method:
(Check One)

Broadcast Surface _____

Broadcast Incorporated _____

Soil Injected _____

Irrigation applied _____

Other _____

TEST REQUESTED (Check all that apply and consult schedule for fees):

Total Minerals: _____ (Includes: total Kjeldahl nitrogen (excluding nitrate nitrogen),phosphorus,potassium, calcium,magnesium,sulfur,manganese,iron,aluminum,boron,copper,zinc,sodium)

Total Kjeldahl Nitrogen only _____ (excluding nitrate nitrogen)

Nitrate Nitrogen _____ (important for lagoons)

Ammonium Nitrogen _____ Moisture or Solids _____ Other _____

FOR LAB USE ONLY

Date Received: _____ **Date Returned:** _____
Payment Received: _____ **Invoice #:** _____

NH_4-N _____ **Moisture** _____ **NO_3-N** _____ **Total Nitrogen:** _____ **Other** _____

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College of Agricultural and Environmental Sciences
Cooperative Extension
SOIL, PLANT, AND WATER LABORATORY
2400 College Station Road

LAB# :
Received by:
Date and Time:

**** Lab Use Only ****

BIOSOLIDS, SLUDGE OR NON-ANIMAL WASTE COMPOST SUBMISSION FORM

Note – Retain a copy of this form for your files. Submit one copy per sample.

Name: _____ **Sample #:** _____
Mailing Address: _____ **County:** _____
City, State, Zip: _____
Phone: _____ **Date:** _____

SAMPLE TYPE

A. Sludge _____ **B. Non –Animal Compost** _____ **C. Other** _____

1. Liquid/Slurry:
   Condition: ☐ Aerobic ☐ Anaerobic
2. Composted: ☐ Yes ☐ No
3. Lime Stabilized: ☐ Yes ☐ No

End Use of Material: _____

TEST REQUESTED

_____ **SC1 -** Total Minerals (Includes: phosphorus, potassium, calcium, magnesium, sulfur, manganese, iron, aluminum, boron, copper, zinc, sodium, lead, cadmium, chromium, nickel, molybdenum)

_____ **SC6 -** Arsenic
_____ **SC7 -** Selenium
_____ **SC9 -** Mercury
_____ **SC2 -** TKN (Kjeldahl N)
_____ **SC8 -** Arsenic + Selenium
_____ **SC3 -** Nitrate Nitrogen
_____ **SC4 -** Ammonium Nitrogen
_____ **SC5 -** Moisture
_____ Other

FOR LAB USE ONLY

Date Received: _____ **Date Returned:** _____
Payment Received: _____ **Invoice#:** _____

NH_4-N: _____ **Moisture/Solids:** _____ **NO_3-N:** _____ **Mercury:** _____

TKN: _____ **Arsenic:** _____ **Selenium:** _____ **Other:** _____

Feed and Forage Testing Application Form
For Beef Cattle and Dairy Cattle

Client Information

Name: _____ Date: _____

Address: _____ Sample No: _____

City: _____ State: _____ Zip: _____ Phone: _____

Date Received in County Office: _____ County: _____ Agent: _____

Animal Classes *(Please check only the most important class)*

Beef Cattle:

Dry Cows hd _____ wt _____ | Stocker hd (steers) _____ hd (heifers) _____ wt _____ exp. ADG _____

Lactating Cows hd _____ wt _____ | Feedlot hd (steers) _____ hd (heifers) _____ wt _____ exp. ADG _____

Heifers hd _____ wt _____ | Other _____

Dairy Cattle: Lactating Cows _____ Dry Cows _____ Heifers _____ wt. _____

Group	Num	Wt.	Milk lb.	Fat%	Days in Milk	
1						
2						Other: _____
3						Milk price, $/cwt _____

Test(s) Requested *(Check all appropriate.)*

___ F1 Hays and Silage (NIR + nitrate + minerals)
___ F2 Hays and Silage (NIR + nitrate, excluding minerals)
___ F3 Hays and Silage (NIR only)
___ F4 Hays and Silage (Wet Chemistry) includes minerals
___ F5 Hays and Silages (Wet Chemistry) excludes minerals
___ F6 Hays and Silages (Wet Chemistry)
___ F7 Routine Feed Analysis (Includes minerals)
___ F8 Proximate Analysis (Protein, Fat, Fiber, Moisture &Ash)
___ F10 Crude Protein
___ F14 Nitrates
Other: _____
Other: _____

Type of Feed and Forage

Please check the one most appropriate type from the list below. Checking more than one type will delay the delivery of the lab report. If the sample is a mixture of ingredients, check the appropriate mixed feed and list ingredients in the space provided on the enclosed worksheet.

Silage:
___ Corn
___ Sorghum (Silage)
___ Small grain
___ Wheat
___ Rye
___ Barley
___ Oats
___ Sorghum (grain)
___ Alfalfa
___ Other legume
___ Grass
___ Mixed
Other:

Green Chop:
___ Corn
___ Sorghum (silage)
___ Small grain
___ Wheat
___ Rye
___ Barley
___ Oats
___ Alfalfa
___ Other legume
___ Grass
___ Mixed
Other:

Hay:
___ Alfalfa
___ Annual Ryegrass
___ Bahia
___ Bermudagrass
___ Alicia
___ Coastal
___ Coastcross
___ Common
___ Tift 44
___ Tift 78
___ Tift 85
___ Mixed
___ Russell
Other (specify): _____
___ Fescue/Orchardgrass
___ Millet
___ Small Grain
___ Wheat
___ Rye
___ Barley
___ Oats
___ Grass/Legume Mix
___ Peanut
___ Perennial Peanut
___ Other Legumes
___ Sorghum hybrids
Other:

Grain:
___ Corn
___ Grain Sorghum
___ Wheat
___ Barley
___ Oats
___ Triticale
Other:

Protein Source:
___ Soybean Meal 48
___ Soybean Meal 44
___ Cottonseed Meal
___ Peanut Meal
___ Whole Cottonseed
___ Protein Supplement
(% Protein)

Other not listed:
_____
_____
_____

By-products:
___ Soybean hulls
___ Cottonseed hulls
___ Peanut hulls
___ Citrus pulp
___ Brewers grains, wet
___ Poultry litter
___ Wheat midds
Other:

Mineral Mixes:
___ Base mix
___ Premix
___ Trace-mineral mix
Other:

Mixed Feeds:
Complete Feed _____
(list ingredients separately)
Silage/grain mix
Silage: _____ Grain: _____

Please send all samples and forms to:
Ag & Environmental Services Laboratories
Feed & Environmental Water Laboratory
2300 College Station Rd
Athens GA 30602-4356

For Lab Use Only

Lab # _____

04/01/08 Rick Hitchcock

Feed Formulation

If you want a state specialist to formulate a diet for you, list the ingredients you have available and their cost in the spaces provided. If you want a commercial product, attach a copy of the feed tag from the product.

Ingredient:	Cost:	Pounds:

If this sample is a complete feed, please list the ingredients used and the pounds / batch below. Providing this information will improve the accuracy of the recommendation you will get with the analysis.

Ingredient:	Pounds:

Feed and Forage Testing Application Form
For Swine, Sheep, Horses and Goats

Client Information

Name: _____ Date: _____

Address: _____ Sample No: _____

City: _____ State: _____ Zip: _____ Phone: _____

Date Received in County Office: _____ County: _____ Agent: _____

Animal Classes *(Please check only the most important class)*

Swine: Sows: Gestation _____ Lactation _____ Both _____ Boars: Growing: _____ Mature: _____

Pigs: Less than 15 lb. ____ 15 - 20 lb. ____ 20 - 40 lb. ____ 40 - 110 lb. ____ 110 market ____ 40 - market ____ Other _____

Sheep: Dry Ewes: _____ Lactating Ewes: _____ Lambs: _____ Other: _____

Horses: Maintenance: _____ Pregnant _____ Lactating _____ Weanling _____ Yearling _____

Work / Performance- Light _____ Work /Performance - Moderate _____ Work / Performance - Intense _____

Goats: _____ Other: _____

Test(s) Requested *(Check all appropriate.)*

___ F1 Hays and Silage (NIR + nitrate + minerals)
___ F2 Hays and Silage (NIR + nitrate, excluding minerals)
___ F3 Hays and Silage (NIR only)
___ F4 Hays and Silage (Wet Chemistry) includes minerals
___ F5 Hays and Silages (Wet Chemistry) excludes minerals
___ F6 Hays and Silages (Wet Chemistry)
___ F7 Routine Feed Analysis (Includes minerals)
___ F8 Proximate Analysis (Protein, Fat, Fiber, Moisture &Ash)
___ F10 Crude Protein
___ F14 Nitrates
Other: _____
Other: _____

Type of Feed and Forage

Please check the one most appropriate type from the list below. Checking more than one type will delay the delivery of the lab report. If the sample is a mixture of ingredients, check the appropriate mixed feed and list ingredients in the space provided on the enclosed worksheet.

Silage:
___ Corn
___ Sorghum (Silage)
___ Small grain
___ Wheat
___ Rye
___ Barley
___ Oats
___ Sorghum (grain)
___ Alfalfa
___ Other legume
___ Grass
___ Mixed
Other:

Green Chop:
___ Corn
___ Sorghum (silage)
___ Small grain
___ Wheat
___ Rye
___ Barley
___ Oats
___ Alfalfa
___ Other legume
___ Grass
___ Mixed
Other:

Hay:
___ Alfalfa
___ Annual Ryegrass
___ Bahia
___ Bermudagrass
___ Alicia
___ Coastal
___ Coastcross
___ Common
___ Tift 44
___ Tift 78
___ Tift 85
___ Mixed
___ Russell
Other (specify): _____
___ Fescue/Orchardgrass
___ Millet
___ Small Grain
___ Wheat
___ Rye
___ Barley
___ Oats
___ Grass/Legume Mix
___ Peanut
___ Perennial Peanut
___ Other Legumes
___ Sorghum hybrids
Other:

Grain:
___ Corn
___ Grain Sorghum
___ Wheat
___ Barley
___ Oats
___ Triticale
Other:

Protein Source:
___ Soybean Meal 48
___ Soybean Meal 44
___ Cottonseed Meal
___ Peanut Meal
___ Whole Cottonseed
___ Protein Supplement
(% Protein)

Other not listed:
_____
_____
_____

By-products:
___ Soybean hulls
___ Cottonseed hulls
___ Peanut hulls
___ Citrus pulp
___ Brewers grains, wet
___ Poultry litter
___ Wheat midds
Other:

Mineral Mixes:
___ Base mix
___ Premix
___ Trace-mineral mix
Other:

Mixed Feeds:
Complete Feed _____
(list ingredients separately)
Silage/grain mix
Silage: _____ Grain: _____

Please send all samples and forms to:
Ag & Environmental Services Laboratories
Feed & Environmental Water Laboratory
2300 College Station Rd
Athens GA 30602-4356

For Lab Use Only

Lab # _____

04/01/08 Rick Hitchcock

Feed Formulation

If you want a state specialist to formulate a diet for you, list the ingredients you have available and their cost in the spaces provided. If you want a commercial product, attach a copy of the feed tag from the product.

Ingredient:	Cost:	Pounds:

If this sample is a complete feed, please list the ingredients used and the pounds / batch below. Providing this information will improve the accuracy of the recommendation you will get with the analysis.

Ingredient:	Pounds:

University of Georgia
Agricultural and Environmental Services Laboratories
Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

Sampling Instructions: Total Coliform and *Escherichia coli* in Drinking Water

Please remember to provide the information requested on the next page of this form.

If submitting samples for EPD compliance monitoring, do not use this form. Please contact the lab for the appropriate form.

1. Samples are accepted for analysis on Monday through Thursday from 8:00 a.m. to 4:00 p.m. If you need a next day shipping label from us, please add an extra $10 to the actual fee of $30 required for the laboratory test. Please make checks out to UGA-FEW Lab. Payment is due upon receipt of sample unless prior arrangements are made.

2. Samples must be accepted for analysis within 24 hours of the collection time. Therefore, collect and ship samples on the same day. If using overnight shipping, please collect and send samples on Monday through Wednesday only.

3. **If you have shock chlorinated your well you must wait until the chlorine has dissipated before collecting sample**.

4. Completely fill out the information requested on the opposite side of the form.

5. Select an inside faucet that is clean not leaking.

6. Remove any faucet attachments such as filters, aerators, screens, splashguards or water-saver valves.

7. Sanitize the faucet inside and out by dipping the faucet neck into undiluted chlorine bleach (do not use color-safe bleach).

8. Open tap fully and flush the faucet and pipes by running water for 3 minutes. If sampling from a faucet that mixes hot and cold water, run hot water for 3 minutes, then cold water for 3 minutes. Do not turn off the water, but reduce the flow to avoid splashing.

9. Uncap the sample bottle without touching the inside of the cap or bottle, fill the bottle above the 100 mL line, but not completely full and recap. Please note that the white substance in the bottle is a dechlorinating agent. Fill the bottle only once; do not rinse.

10. Place sample in the same box, seal sample box, affix UPS shipping label and call UPS at 1-800-742-5877 to determine your local pick-up/drop off place and time for “Next Day Air” packages. Or hand deliver to the Ag Services Lab, 2300 College Station Rd, Athens.

University of Georgia
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Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

If submitting samples for EPD compliance monitoring, do not use this form. Please contact the lab for the appropriate form.

Submission Form: Total Coliform and *Escherichia coli* in Drinking Water
Instructions for collecting and delivering the sample are on the previous page of this form.

Client Information:	**Sample Location (if different from client address):**
County Extension Office:	
Name:	County:
	Street:
Street:	City, State, Zip:
City, State, Zip:	***Lab use only***:
Phone:	Lab # FEW____:
Fax:	Date/Time Received:
E-mail:	Carrier:
Sample Information:	Chlorine (Y / N):
Date/Time Sampled:	Accept/Reject (A / R):
Sample ID:	Paid (Y / N):
Well Diameter / Depth:	Special Notes:
Date of Last Shock Chlorination (if applicable):	Date/Time Analyzed:
Year Drilled / Pump Age:	**Results (MPN/100mL):**
Comments:	Total Coliform :_____ / *Escherichia coli*: _____

University of Georgia
Agricultural and Environmental Services Laboratories
Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

Sampling Instructions: *Escherichia coli* in Recreational Water

Please remember to provide the information requested on the next page of this form.

1. Samples are accepted for analysis on Monday through Thursday from 8:00 a.m. to 4:00 p.m. If you need a next day shipping label from us, please add an extra $10 to the actual fee of $30 required for the laboratory test. Please make checks out to UGA-FEW Lab. Payment is due upon receipt of sample unless prior arrangements are made.

2. Samples must be accepted for analysis within 24 hours of the collection time. Therefore, collect and ship samples on the same day. If using overnight shipping, please collect and send samples on Monday through Wednesday only.

3. Provide the information requested on the opposite side of the form.

4. Select the appropriate sampling area needed to obtain a representative sample for the recreational use of the water. If you need help selecting a sampling location, contact your county extension agent or the FEW Laboratory.

5. Uncap the sample bottle without touching the inside of the cap or bottle, collect the water sample by holding the bottle near its base and plunging it, neck downward, below the surface. Turn bottle until neck points slightly upward and mouth is directed toward the current. If there is not current, create a current artificially by pushing the bottle forward horizontally in a direction away from hand. Collect the samples approximately 0.3 m or 1 ft below the water surface.

6. The white substance in the bottle is a dechlorinating agent. Please do not rinse the bottle.

7. It is best to take samples during a range of environmental and climatic conditions, especially during times when maximal pollution occurs.

8. Place sample in the same box, seal sample box, affix UPS shipping label and call UPS at 1-800-742-5877 to determine your local pick-up/drop off place and time for “Next Day Air” packages. Or hand deliver to the Ag Services Lab, 2300 College Station Rd, Athens.

University of Georgia
Agricultural and Environmental Services Laboratories
Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

Submission Form: *Escherichia coli* in Recreational Water.
Instructions for collecting and delivering the sample are on the previous page of this form.

Client Information:	**Sample Location (if different from client address):**
County Extension Office:	
Name:	County:
	Nearest Street:
Street:	City, State, Zip:
City, State, Zip:	***Lab use only***:
Phone:	Lab # FEW____:
Fax:	Date/Time Received:
E-mail:	Carrier:
Sample Information:	Accept/Reject (A / R):
Date/Time Sampled:	Paid (Y / N):
Sample ID:	Special Notes:
Type of Surface Water (Pond, Stream, etc) :	
Sampler's Name:	Date/Time Analyzed:
Comments:	**Results (MPN/100mL):**
	Escherichia coli: _____

University of Georgia
Agricultural and Environmental Services Laboratories
Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

Sampling Instructions: Total Coliform and *Escherichia coli* in Crop Protection and Irrigation Water

Please remember to provide the information requested on the next page of this form.

1. Samples are accepted for analysis on Monday through Thursday from 8:00 a.m. to 4:00 p.m. If you need a next day shipping label from us, please add an extra $10 to the actual fee of $30 required for the laboratory test. Please make checks out to UGA-FEW Lab. Payment is due upon receipt of sample unless prior arrangements are made.

2. Samples must be accepted for analysis within 24 hours of the collection time. Therefore, collect and ship samples on the same day. If using overnight shipping, please collect and send samples on Monday through Wednesday only.

3. Provide the information requested on the opposite side of the form.

4. Select the appropriate sampling area needed to obtain a representative sample of the crop protection or irrigation water. For either irrigation or crop protection water from either a well or surface source, collect the sample at the point of use, just prior to application in the case of irrigation or in the case of crop protection water, just prior to filling the spray tank. If you need help selecting a sampling location, contact your county extension agent or GAP auditor.

5. Fill the bottle completely, leaving only a small air space.

6. The white substance in the bottle is a dechlorinating agent. Please do not rinse the bottle.

7. Place sample in the same box, seal sample box, affix UPS shipping label and call UPS at 1-800-742-5877 to determine your local pick-up/drop off place and time for “Next Day Air” packages. Or hand deliver to the Ag Services Lab, 2300 College Station Rd, Athens.

University of Georgia
Agricultural and Environmental Services Laboratories
Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

Submission Form: Total Coliform and *Escherichia coli* in Crop Protection and Irrigation Water
Instructions for collecting and delivering the sample are on the previous page of this form.

Client Information:	**Sample Location (if different from client address):**
County Extension Office:	
Name:	County:
	Nearest Street:
Street:	City, State, Zip:
City, State, Zip:	***Lab use only***:
Phone:	Lab # FEW____:
Fax:	Date/Time Received:
E-mail:	Carrier:
Sample Information:	Chlorine (Y / N):
Date/Time Sampled:	Accept/Reject (A / R):
Sample ID:	Paid (Y / N):
Surface or Well Water:	Special Notes:
Type of Surface Water:	Date/Time Analyzed:
Well Diameter/Depth (if applicable):	**Results (MPN/100mL):**
Comments:	Total Coliform :_____ *Escherichia coli*: _____

University of Georgia
Agricultural and Environmental Services Laboratories
Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

Sampling Instructions: Total Coliform and *Escherichia coli* in Water from a Georgia GAP Fruit and Vegetable Facility

Please remember to provide the information requested on the next page of this form.

1. Samples are accepted for analysis on Monday through Thursday from 8:00 a.m. to 4:00 p.m. If you need a next day shipping label from us, please add an extra $10 to the actual fee of $30 required for the laboratory test. Please make checks out to UGA-FEW Lab. Payment is due upon receipt of sample unless prior arrangements are made.

2. Samples must be accepted for analysis within 24 hours of the collection time. Therefore, collect and ship samples on the same day. If using overnight shipping, please collect and send samples on Monday through Wednesday only.

3. **If you have shock chlorinated, wait until the chlorine has dissipated before collecting sample**.

4. Completely fill out the information requested on the opposite side of the form.

5. Select an inside faucet that is clean not leaking.

6. Remove any faucet attachments such as filters, aerators, screens, splashguards or water-saver valves.

7. Sanitize the faucet inside and out by dipping the faucet neck into undiluted chlorine bleach (do not use color-safe bleach).

8. Open tap fully and flush the faucet and pipes by running water for 3 minutes. If sampling from a faucet that mixes hot and cold water, run hot water for 3 minutes, then cold water for 3 minutes. Do not turn off the water, but reduce the flow to avoid splashing.

9. Uncap the sample bottle without touching the inside of the cap or bottle, fill the bottle above the 100 mL line, but not completely full and recap. Please note that the white substance in the bottle is a dechlorinating agent. Fill the bottle only once; do not rinse.

10. Place sample in the same box, seal sample box, affix UPS shipping label and call UPS at 1-800-742-5877 to determine your local pick-up/drop off place and time for “Next Day Air” packages. Or hand deliver to the Ag Services Lab, 2300 College Station Rd, Athens.

University of Georgia
Agricultural and Environmental Services Laboratories
Feed and Environmental Water Laboratory

2300 College Station Road
Athens, GA 30602-4356
Phone: 706-542-7690
Fax: 706-542-1474

Submission Form: Total Coliform and *Escherichia coli* in Water from a Georgia GAP Fruit and Vegetable Packing Facility, Field-Pack Operation, or Worker Hygiene Process (Circle all that Apply)

Instructions for collecting and delivering the sample are on the previous page of this form.

Client Information:	**Sample Location (if different from client address):**	
County Extension Office:		
Name:	County:	
	Street:	
Street:	City, State, Zip:	
City, State, Zip:	***Lab use only***:	
Phone:	Lab # FEW____:	
Fax:	Date/Time Received:	
E-mail:	Carrier:	
Sample Information:	Chlorine (Y / N):	
GCIA or GFVGA rep:	Accept/Reject (A / R):	
Date/Time Sampled :	Paid (Y / N):	
Sample Identifier (circle sample type at the top of the page):	Special Notes:	
Well Diameter / Depth:	Date/Time Analyzed:	
Depth to Water / Screens:	**Results (MPN/100mL):**	
Year Drilled / Pump Age:	Total Coliform :_____	*Escherichia coli*: _____

The University of Georgia
COOPERATIVE EXTENSION
College of Agricultural and Environmental Sciences

Soil, Plant, and Water Laboratory
2400 College Station Road
Athens, GA 30602-9105
Phone: (706) 542-5350; Fax: (706) 369-5734

Research Sample Submission Form

Date Submitted: _____ Date Received: _____ Lab Number (s): _____
SOIL LAB USE ONLY

Sample Type: _____ Number of Samples Submitted: _____
(Categories listed below)

Sample I.D. Numbers: _____
(Numbering System must be Simplified and Consecutive (Example, 1,2,3 or A, B, C etc.)

Return Results To: (complete mailing address)

Name: _____

Department Name: _____

Building Name: _____ Room # _____

_____
(If off campus) City State Zip

Phone: _____ Fax: _____

Email Address: _____

Account Name: _____

Account No. / Purchase Order No: _____

Bill To: (if address different from Return to)

Name: _____

Address: _____

_____
City State Zip

Disposition of Sample after Analysis:

☐ Discard ☐ Hold for Pickup ☐ Return
(If samples are returned you might be billed for shipping charges)

Note any Special Instructions: _____

Tests Requested

Soil

- ☐ S1 Routine Test [1]
- ☐ S1A pH Only
- ☐ S2 Routine + Heavy Metals
- ☐ S3 Boron
- ☐ S4 Soluble Salts
- ☐ S5 Mechanical Test
- ☐ S6 Organic Matter
- ☐ S7 NO_3-N
- ☐ S8 NH_4-N
- ☐ S11 Greenhouse & Nursery [2]
- ☐ S12 pH for greenhouse/nursery only
- ☐ S19 Carbon + Nitrogen + Sulfur
- ☐ S20 Any Single Element (in S19) ☐ C ☐ N ☐ S
- ☐ S21 Any 2 Elements (in S19) ☐ C ☐ N ☐ S
- ☐ Other:

Plant

- ☐ P1 Basic Plant Test[3]
- ☐ P2 Mineral Analysis (w/o N,S) [4]
- ☐ P3 Carbon + Nitrogen +Sulfur
- ☐ P4 Any Single Element (in P3) ☐ C ☐ N ☐ S
- ☐ P5 Any 2 Elements (in P3) ☐ C ☐ N ☐ S
- ☐ Other:

Water

- ☐ W1 Basic Test (pH+ Minerals[4])
- ☐ W1A Mineral w/acid digestion
- ☐ W3 Anions (Chloride, Fluoride, Phosphate, Sulfate, Nitrate)
- ☐ W4 Any Single Anion (in W3) ☐ Cl ☐ F ☐ PO_4 ☐ SO_4 ☐ NO_3
- ☐ W5 Any 2 Anions (in W3) ☐ Cl ☐ F ☐ PO_4 ☐ SO_4 ☐ NO_3
- ☐ W6 NO_3-+NO2-N
- ☐ W7 NO2-N
- ☐ W8 NH_4-N
- ☐ W9 Lead
- ☐ W11 EC
- ☐ W18 Alkalinity
- ☐ Other:

Biosolids, Sludge, etc.

- ☐ SC1 Total Mineral [5]
- ☐ SC3 NO_3-N
- ☐ SC4 NH_4-N
- ☐ SC5 Moisture
- ☐ SC6 Arsenic (As)
- ☐ SC7 Selenium (Se)
- ☐ SC8 As + Se
- ☐ SC9 Mercury (Hg)
- ☐ SC15 C+N+S (Carbon + Nitrogen + Sulfur)
- ☐ SC16 Any Single Element (in SC15) ☐ C ☐ N ☐ S
- ☐ SC17 Any 2 Elements (in SC15) ☐ C ☐ N ☐ S
- ☐ Other:

1. Routine Test: pH, P, K, Ca, Mg, Zn, Mn (elements reported in mg/kg)
2. Greenhouse Test: for mixes which include soil, sand, peat, pine bark, vermiculite, etc, P, K, C, Ca, Mg, NH_4, NO_3, (reported in ppm), soluble salt (reported in mmhos/cm) ***THIS TEST MAY NOT BE APPLICABLE TO A REGULAR SOIL SAMPLE***
3. Basic Plant: Total N, S, P, K, Ca, Mg, Fe, Al, B, Cu, Zn, Na, Cr, Cd, Ni, Mo
4. Mineral Analysis (w/o N,S): P, K, Ca, Mg, Fe, Al, B, Cu, Zn, Na, Cr, Cd, Ni, Mo
5. Total Minerals (Hot Acid Digestion): P, K, Ca, Mg, Mn, Fe, Al, B, S, Cu, Zn, Na, Pb, Cr, Cd, Ni, Mo.

Date Mailed: _____

LAB USE ONLY
Date: _____
Set I.D.: _____
Page #: _____

CHECK SUBMISSION FORM

REFER TO CURRENT PRICE LIST FOR CORRECT CHARGES

BE SURE TO NOTE NUMBER OF TESTS UNDER CORRECT HEADING

County Code: _____

Check covers analysis for the following samples. Indicate number of tests requested (use number, **NOT CHECK MARK**)

	Client Name	#Routine	#Boron	#Soluble Salts	#O.M.	#Nitrate	#Green-house	#Other	Amt. Due ($)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									

Total Amount Due ($) _____

Order Form for Soil, Plant & Water Analysis Supplies

<table>
<tr><td>From:</td><td>To: Soil, Plant & Water Laboratory
2400 College Station Road
Athens, Georgia 30602-9105

OR
E-mail: soiltest@arches.uga.edu</td><td>County:

Date:</td></tr>
<tr><td>Quantity</td><td colspan="2">Description of Item</td></tr>
<tr><td></td><td colspan="2">Plant Analysis Mailing Kits</td></tr>
<tr><td></td><td colspan="2">Soil Test Probes (Check made out to Georgia 4-H Foundation)</td></tr>
<tr><td colspan="3">Download all other forms from http://aesl.ces.uga.edu</td></tr>
<tr><td colspan="3">*******Submit orders for Water Bottles, Boxes and Soil bags to the following address: **********
Storekeeper Cooperative Ext. Service
The University of Georgia
Room 103, Hoke Smith Annex
Athens, Georgia 30602</td></tr>
<tr><td colspan="3">Mailing Labels – (Order from your District Director)</td></tr>
</table>

Retain a copy for your records.
Submit other forms to Soil, Plant & Water Laboratory, 2400 College Station Rd, Athens, GA 30602-9105