

## PART XIV

# Diagnostic Laboratory Services

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**NOTE: Access to the following laboratory services may be obtained through your local Virginia Cooperative Extension Office.**

### Manure testing

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Funded through the Virginia Department of Conservation and Recreation (DCR), manure samples are sent to a laboratory at the University of Maryland for testing. Samples are analyzed for ammonia, copper, manganese, nitrogen, phosphate, potash, sulfur, zinc, and moisture content. Containers, sample forms, and instructions for mailing can be obtained from a local Extension office. An agricultural Extension Agent or DCR nutrient management specialist should be consulted for interpretation of the results.

Charge – none

### Pre-sidedress nitrate soil test for corn

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Funded through the Virginia Department of Conservation and Recreation (DCR), field test kits are available for measuring soil nitrate concentrations. These tests should be conducted on corn fields with a history of manure or biosolids application within the previous three years, or on fields that received applications of commercial fertilizer nitrogen of 30 pounds or less in a starter band, or less than 40 pounds broadcast at planting. Test results are used to determine the most appropriate level of nitrogen to be applied as a sidedress on corn. An Extension Agent or DCR nutrient management specialist should be contacted to assist with the test.

Charge - none

### Soil testing

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Soil samples are analyzed for specific soil nutrients to determine proper application rates of fertilizer and lime for optimum plant growth. Routine analysis includes soil pH, P, K, Ca, Mg, Zn, Mn, Cu, Fe, and B. Soluble Salts and Organic Matter tests are also available. Completed soil test results, along with a recommendation on fertilization and liming, are mailed to the client. Sampling and mailing instructions are found on the sample boxes and forms, which should be sent directly to the lab with the soil sample and payment.

<b>Charges per sample:</b>	<b>In-State</b>	<b>Out-of-State</b>
Routine analysis ( <b>No charge for commercial farm samples</b> )	\$7.00	\$10.50
Soluble salts	\$3.00	\$ 4.50
Organic matter	\$3.00	\$ 4.50
FAX results	\$1.00	\$ 1.50

### Insect identification

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Insect samples and insect damaged plant material are handled and processed through the insect identification laboratory. Insects from any structural, plant, or animal hosts are accepted. Insects are identified to the lowest taxonomic level needed for control decisions. Control recommendations accompany insect identification results, which are sent back electronically to each Virginia Cooperative Extension office. Virginia Cooperative Extension offices are supplied with alcohol vials and mailing tubes for specimen shipment. Samples should not be submitted before reviewing instructions on the back of the insect identification submission form 444-113.

Charge – none

### **Plant disease and plant identification**

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The Plant Disease Clinic offers plant diagnostic services for diseases caused by fungi, bacteria, viruses, and nematodes, in addition to abiotic problems, such as environmental stress, herbicide injury, and air pollution injury. Both predictive and diagnostic nematode assay services are offered. Predictive assays monitor nematode populations in soil where no plant problem has been observed, whereas diagnostic assays determine whether nematode feeding is the cause of observed plant damage. The Clinic also performs plant and mushroom identifications, although weed identifications are done by the Weed Clinic. The local Extension office should be contacted for information on proper sampling technique and submission of samples. Submit plant samples for disease diagnosis with submission form 450-097. Refer to the back of the form for information on proper sampling techniques. Submit soil samples for predictive nematode assays with submission form 450-098 and soil samples for diagnostic assays with submission form 450-901. Samples should be submitted early in the week to avoid weekend mail.

Charges -No charge for routine plant disease diagnosis, plant or mushroom identification, or diagnostic nematode assays. A fee is charged for plants requiring virus detection. Charges vary, depending upon the number of antibody tests conducted for virus identification.

The fee for predictive nematode assays is \$11.00 for each soil sample submitted for routine analysis, and \$19.00 per soil sample submitted for routine analysis plus cyst counts.

Also see: <http://www.ppws.vt.edu/~clinic>

### **Weed identification**

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Weed samples submitted to the Plant Disease Clinic are processed and transferred to the Weed Identification Clinic for identification and control recommendations. If possible, weed samples should include leaves, stems, roots, flowers, and seed. Samples should be accompanied by the Weed Identification submission form 450-138.

Charge –none

Also see: <http://www.ppws.vt.edu/~clinic/weedid.html>

### **Forage testing**

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Basic analysis results for forage, silage, and complete feed samples submitted to the Forage Testing Laboratory include dry matter, crude protein, acid detergent fiber (ADF), and estimates of total digestible nutrients, net energy, and digestible protein. In addition to the basic analysis, other analyses that may be conducted, include macro minerals, trace minerals, nitrates, fat (ether extract), soluble protein, lignin, and neutral detergent fiber (NDF). Whole corn stalks or cobs must be pre-chopped before shipping.

	<b>Charges Per Sample</b>
Basic Analysis	\$10.00
Macro minerals (Ca, P, Mg, K, Na, and S)	\$ 7.00
Macro + trace minerals (Ca, P, Mg, K, Na, S, Zn, Cu, Mn, and Fe)	\$10.00
Nitrates	\$ 5.00
Fat	\$ 7.00
Soluble protein	\$ 4.00
Lignin	\$ 7.00
Neutral detergent Fiber (NDF)	\$ 4.00

### **Toxicology**

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The Toxicology Laboratory has the capability to conduct analyses for heavy metals, minerals (deficiencies and poisonings), Vitamins A and E, pesticides, rodenticides, mycotoxins, nitrate, and cyanide. The majority of samples submitted to the laboratory deal with forage and feed analyses for mycotoxins, nitrate, and cyanide.

Mycotoxins are typically not a problem in hay or haylage. Individuals unsure of the appropriateness of a sample should contact the toxicologist before sending the sample. A representative sample of at least one pound is adequate for feed and forage tests. A history, including feed type, type of animal, and clinical sign, should be submitted with each sample.

#### Charge per sample

Aflatoxin (semi-quantitative)	\$20.00
Zearalenone (semi-quantitative)	\$20.00
Vomitoxin (semi-quantitative)	\$20.00
Mycotoxin Screen for aflatoxin, zearalenone, and vomitoxin (semi-quantitative)	\$30.00
Fumonisin – moldy corn poisoning of horses (semi-quantitative)	\$25.00
Nitrate	\$14.00
Cyanide – prussic acid (sample must be frozen)	\$15.00

#### Pesticide residues

The Pesticide Residue Laboratory conducts analyses of pesticides in soil, water, animal, and plant tissue samples referred through Virginia Cooperative Extension. Multi-residue pesticide analyses and pesticide-specific analyses assist in evaluating existing, or potential problems with field or ornamental crops, household water supplies, pesticide spills, and fish and wildlife poisonings. Analysis is dependent upon obtaining proper analytical method, having a standard of the pesticide in question, and having the instrumentation required for the analysis. The laboratory should be contacted before samples are collected and sent. A cover letter should accompany samples. The letter should contain the following information: sample identification, tests requested, and any other information that may add to optimizing the laboratory analysis.

#### Charge per sample:

Water scan	minimum of \$35.00
Soil scan	minimum of \$45.00
Plant scan	minimum of \$45.00
Animal scan	minimum of \$45.00
Individual pesticide analysis	minimum of \$25.00

**Virginia Tech does not run plant tissue samples.**

