COLLEGE OF AGRICULTURE AND LIFE SCIENCES
SCHOOL OF PLANT AND ENVIRONMENTAL SCIENCES
VIRGINIA TECH

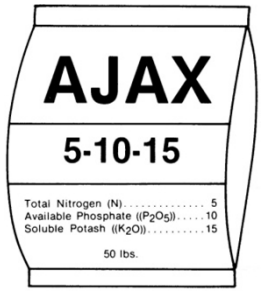
Virginia Cooperative Extension
Virginia Tech • Virginia State University

The Soil Testing Laboratory is housed in the School of Plant and Environmental Sciences on the main campus of Virginia Tech. It's also part of the Virginia Cooperative Extension system. The lab participates in the North American Proficiency Testing program, www.naptprogram.org.

NAPT
Participating Laboratory

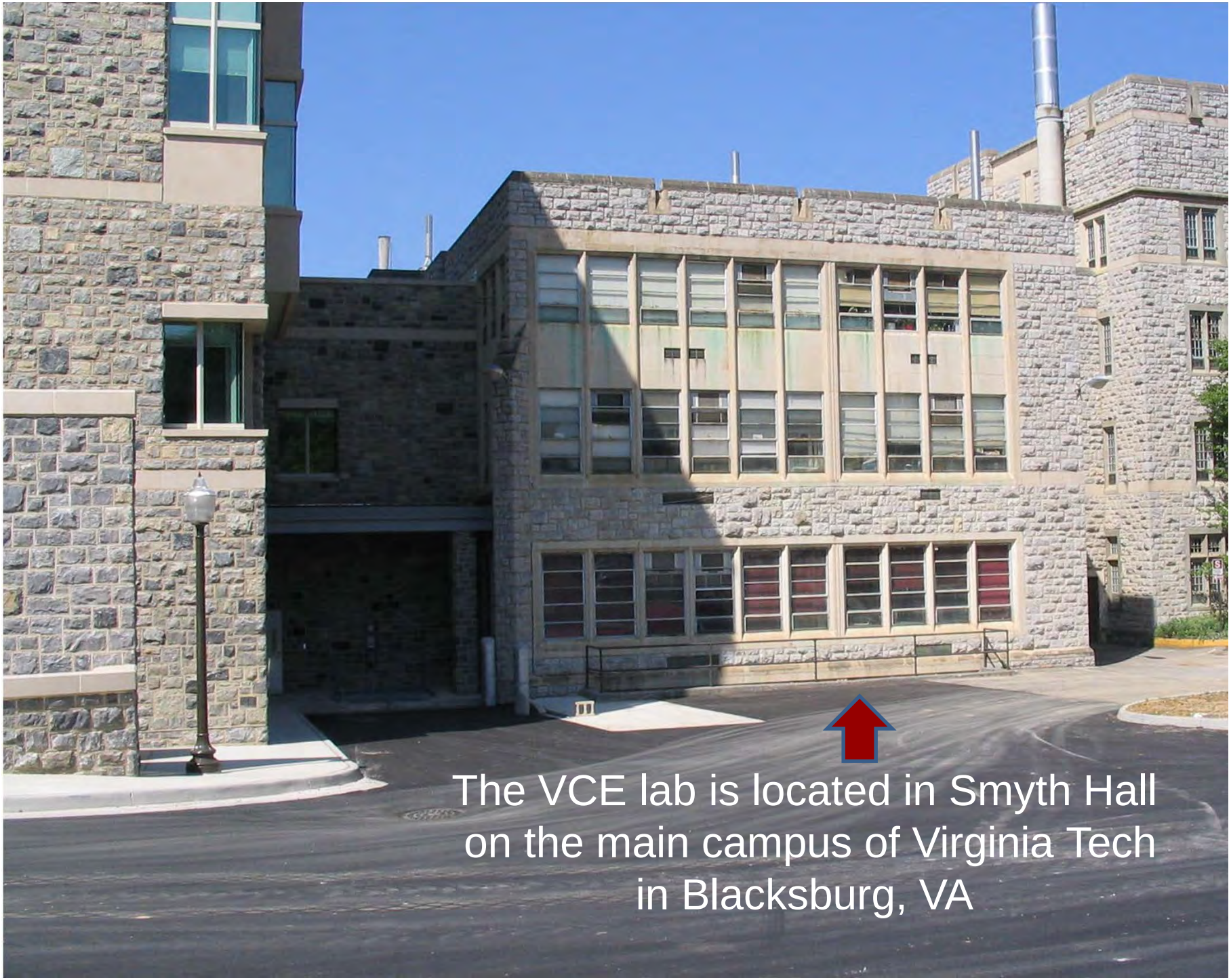
Soil Testing:

- **Used to estimate acidity and nutrient availability in the soil in order to provide lime and fertilizer recommendations.**



- **Available through Virginia Cooperative Extension (VCE) and private laboratories.**

Virginia Cooperative Extension
Virginia Tech • Virginia State University


The VCE lab is located in Smyth Hall
on the main campus of Virginia Tech
in Blacksburg, VA

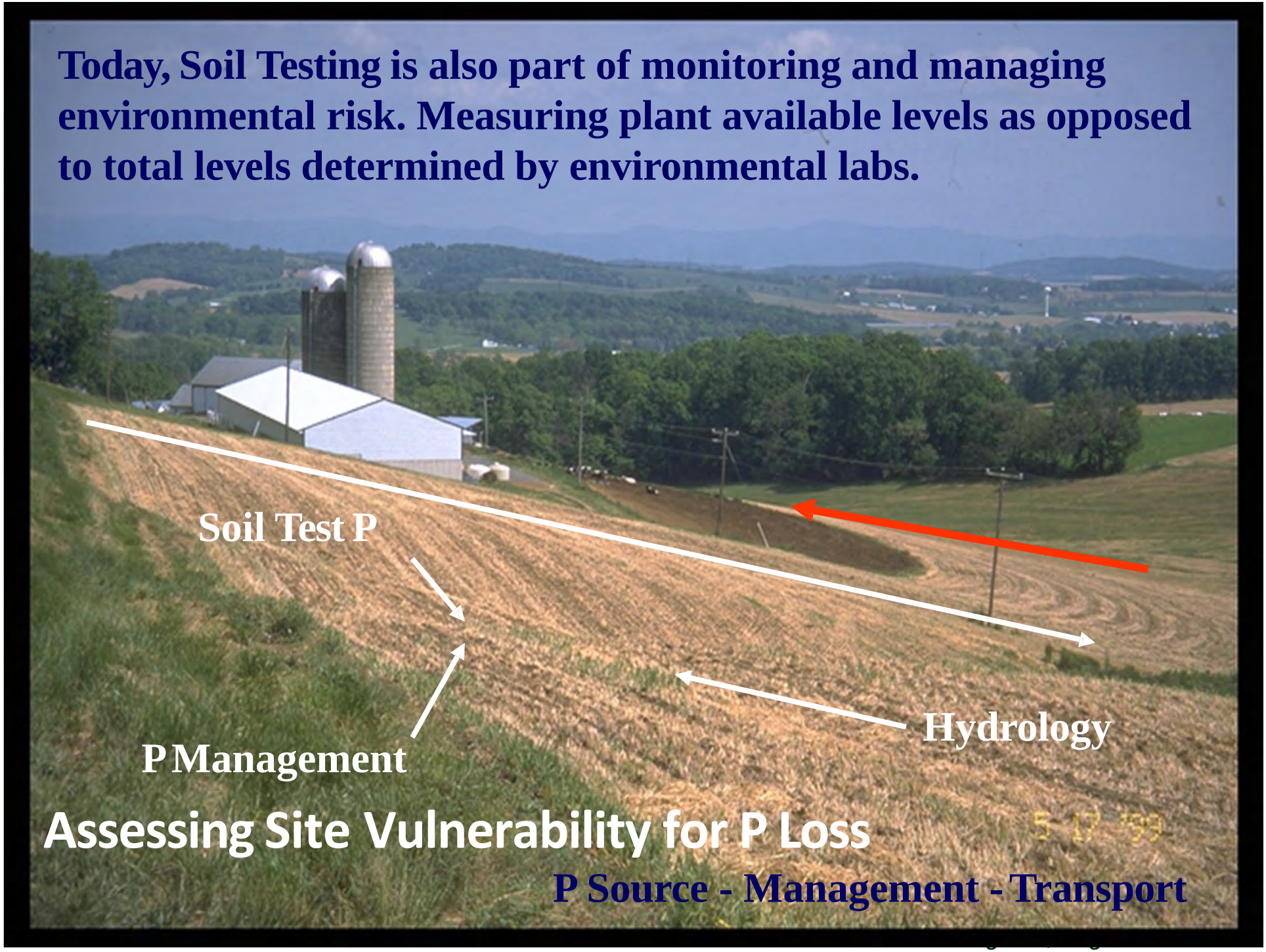
BEGAN OPERATIONS IN 1938

1955

1960

1940’s & 50’s - Increased availability of fertilizers spur soil testing as a management tool to measure deficiencies.

Soil Testing Lab, Virginia Tech


Today, Soil Testing is also part of monitoring and managing environmental risk. Measuring plant available levels as opposed to total levels determined by environmental labs.
Soil Test P
P Management
Hydrology
Assessing Site Vulnerability for P Loss
P Source - Management - Transport


Soil Testing
Department of Crop and Soil
Virginia Tech
THROUGH 145
145
SOIL
TESTING
LABORATORY
Deposit Samples
Here
LABORATORY HOURS
8:00 AM TO 12:00 NOON
1:00 PM TO 5:00 PM
MONDAY THROUGH FRIDAY
UNITED STATES
POSTAL SERVICE
145 Smyth Hall

Summary of Sampling Instructions

Back of Form→

↓On Sample Box↓

INSTRUCTIONS FOR SAMPLING SOIL

1. EQUIPMENT NEEDED: SAMPLING TUBE, SPADE, TROWEL, OR AUGER AND CLEAN PLASTIC PAIL.
2. SAMPLES SHOULD BE MADE UP OF AT LEAST 5 SUBSAMPLES OR CORES FROM EACH ACRE REPRESENTED BY THE SAMPLE. SAMPLE TO PLOW DEPTH IN CROP LAND AND THE TOP 2 TO 4 INCHES IN PASTURE OR SOD. MIX SAMPLE THOROUGHLY IN THE PAIL BEFORE THE SAMPLE CARTON IS FILLED WITH SOIL. SAMPLE SHOULD NOT REPRESENT MUCH OVER 10 ACRES.
3. IF THERE ARE VISIBLE DIFFERENCES IN SOILS OR CROP GROWTH IN A FIELD, A SEPARATE SAMPLE SHOULD BE TAKEN FROM EACH UNIFORM AREA. DO NOT TAKE SUBSAMPLES FROM ERODED SPOTS, BACK FURROWS OR SMALL DEPRESSIONS. LARGE AREAS IN A FIELD THAT HAVE BEEN MANURED, LIMED, FERTILIZED, OR OTHERWISE TREATED DIFFERENTLY SHOULD BE SAMPLED SEPARATELY.

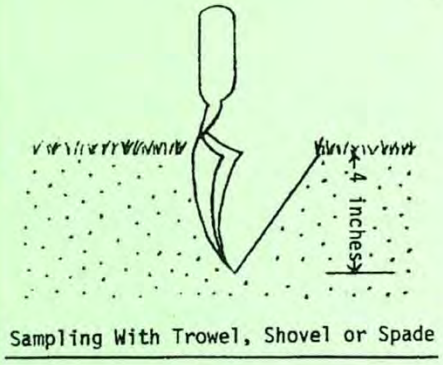
Important:
For test results to be meaningful, use extreme care when taking soil samples. Each sample represents many tons of soil in your lawn or garden. Test results cannot be any more accurate than the sample submitted to the laboratory. **Do not** take samples when the soil is extremely wet.

Sampling Instructions:
Divide your lawn or garden into sampling areas. Each area should be uniform in the kind of soil and in the past fertilizer and lime treatments it has received. An example would be separate samples (areas) for front and back lawns. For **shrubs and trees,** select an area from the trunk to the outer edges of the branches. Take a separate sample from each area as shown in the diagram below.

Use the following procedure for each sampling area:

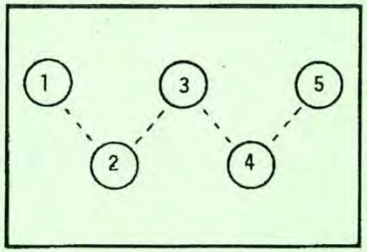
A – Take samples with a trowel, shovel, spade, or auger. Make a vertical cut 4" deep for lawns, or to plowing depth for gardens, and push the soil aside. Then cut a thin slice from the side of the opening that is of uniform thickness, approximately 2" in width, and extending from the top of the ground to the depth of the cut. Scrape away or discard any surface mat of grass or litter and place the slice of soil into a clean bucket or other container. Follow this sampling procedure in 10 or more different locations within each sampling area, each time placing the resulting soil in the same container, giving you a composite sample.

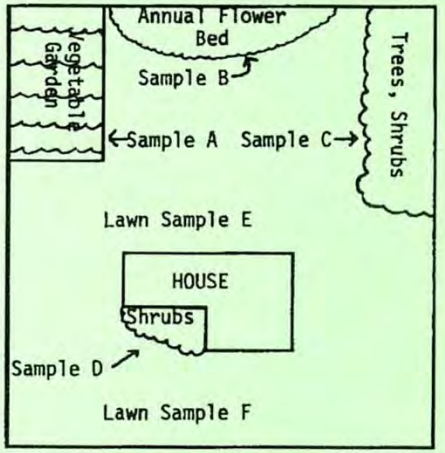
B – Thoroughly mix the soil from the composite sample and then fill the sample box to the top with the mixture. Fill in the information requested on the side of the sample box, including sample number, complete the other side of this sheet, and send sample, sheet, and payment directly to the Soil Testing Laboratory.



Sampling With Trowel, Shovel or Spade

How To Take Composite Samples of Each Bed or Section






Set Up Room
Soil Preparation Room
U.S. MAIL
PRIORITY MAIL
PROPERTY OF U.S. POSTAL SERVICE
UNITED STATES POSTAL SERVICE


Sample
Set Up


Warm Dry Air is Blown Over Samples in Cabinets to Remove Moisture


Before
Sample Grinding
and Sieving
After

Sub-sampling Prepared Soil for Analysis

↗ Nutrient Tray ↙

←pH Tray

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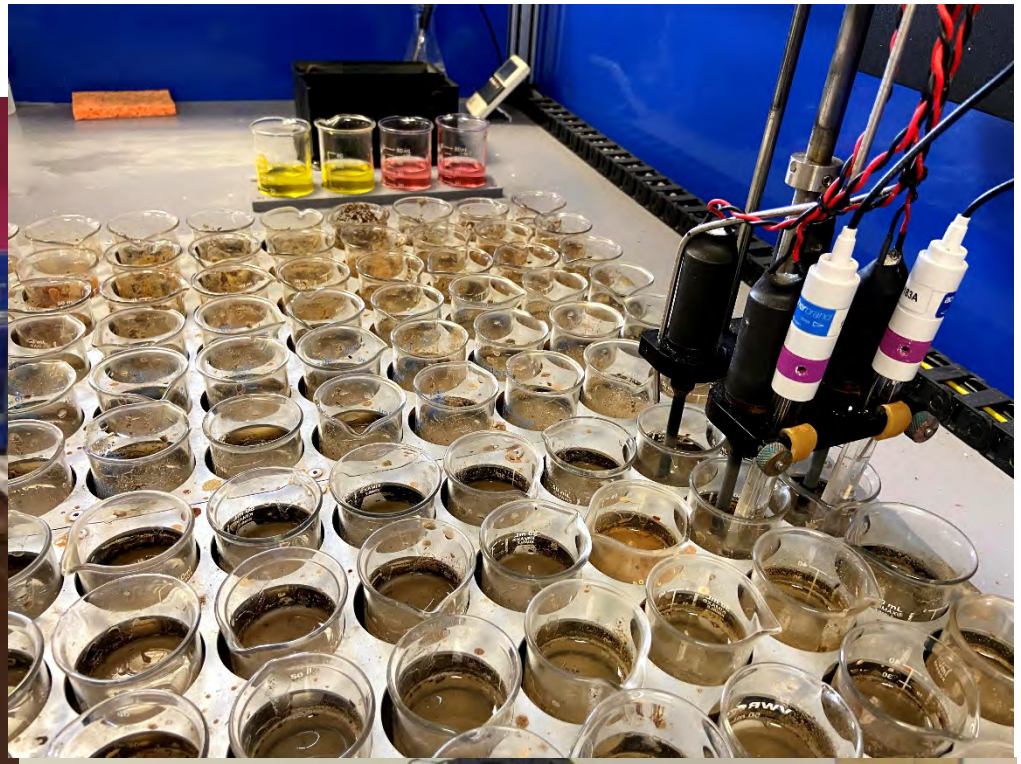
Soil Testing Office

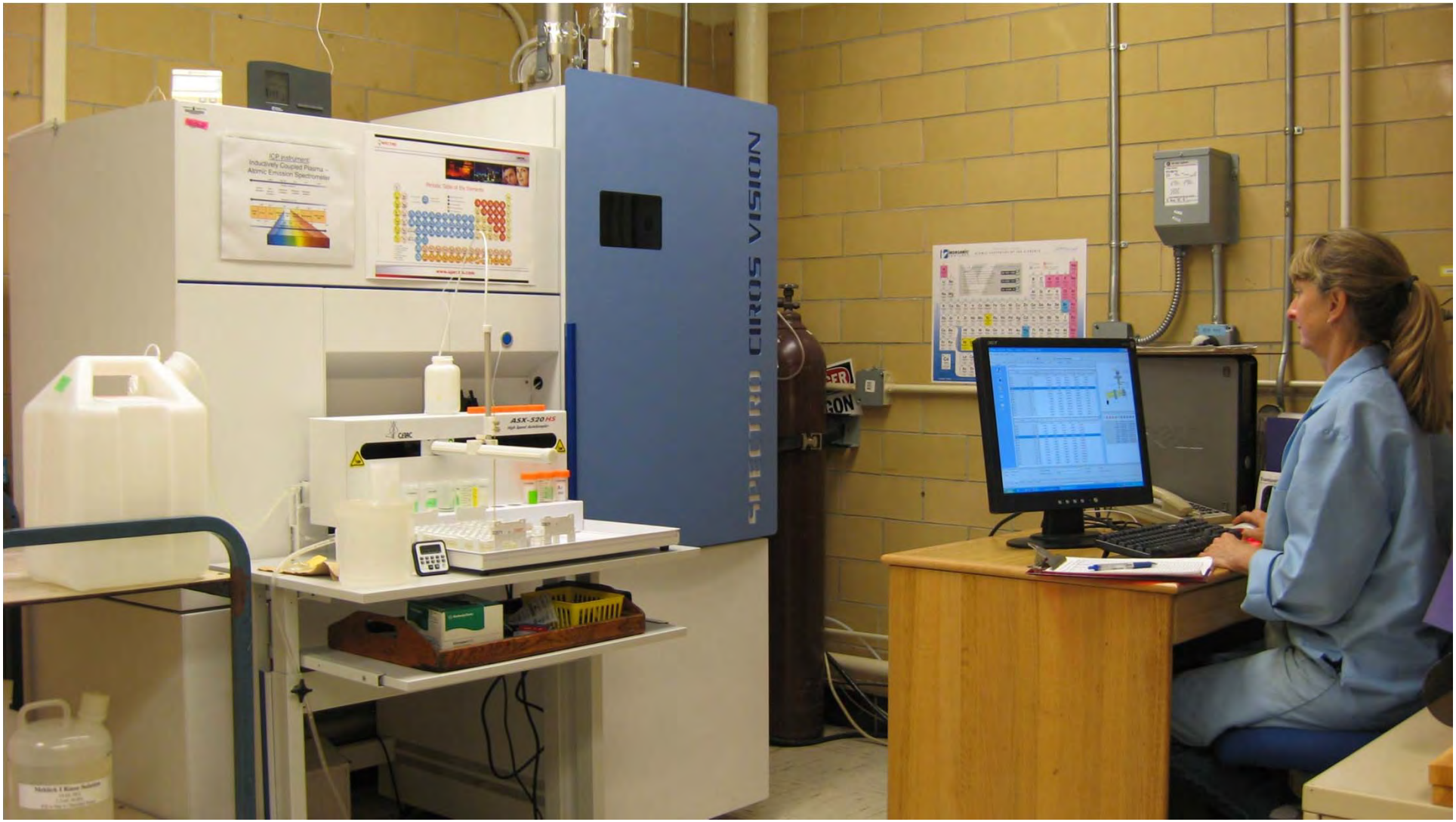
Sample Information Sheets are entered into the lab's computer system.

pH Measurement

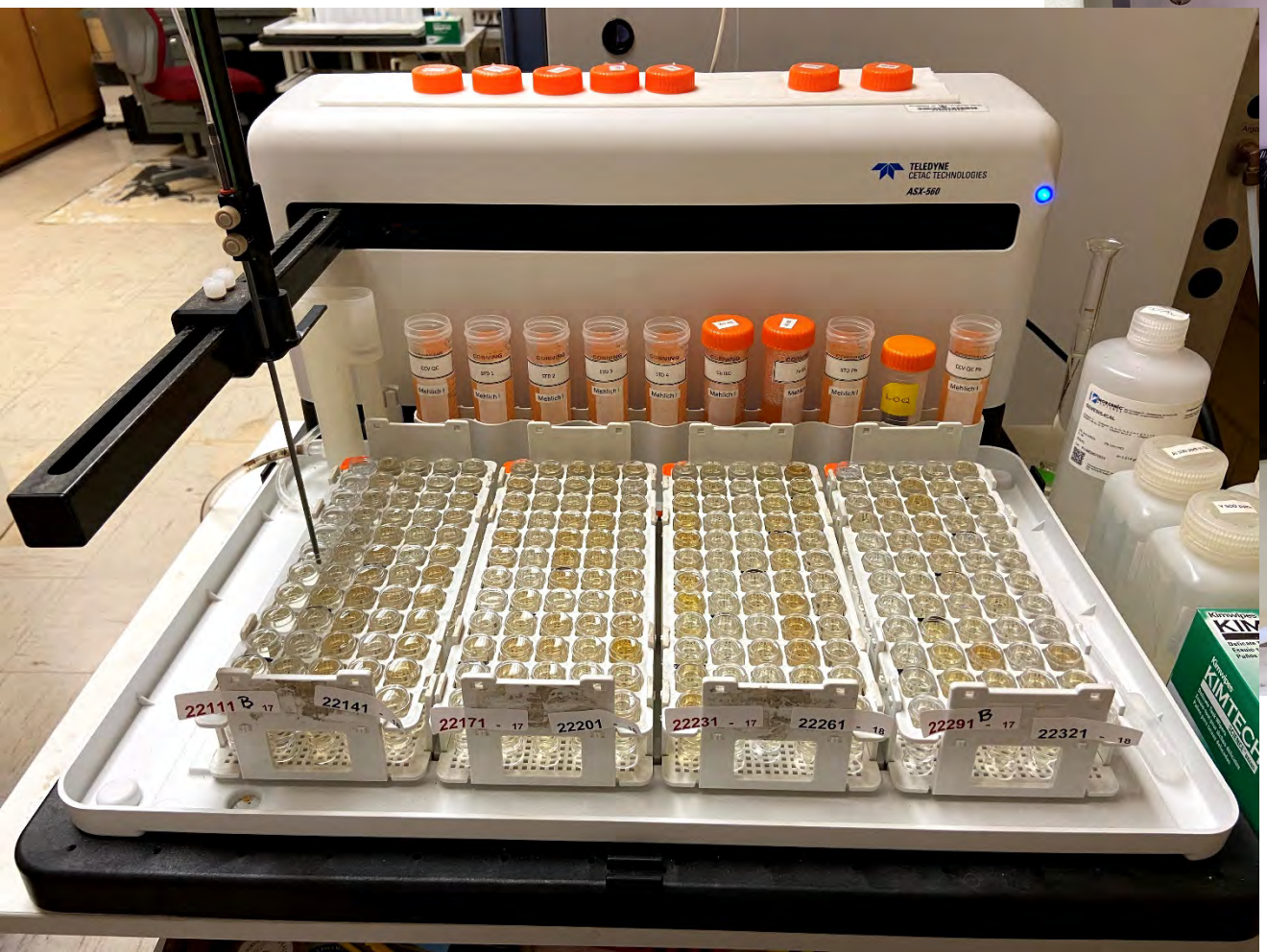


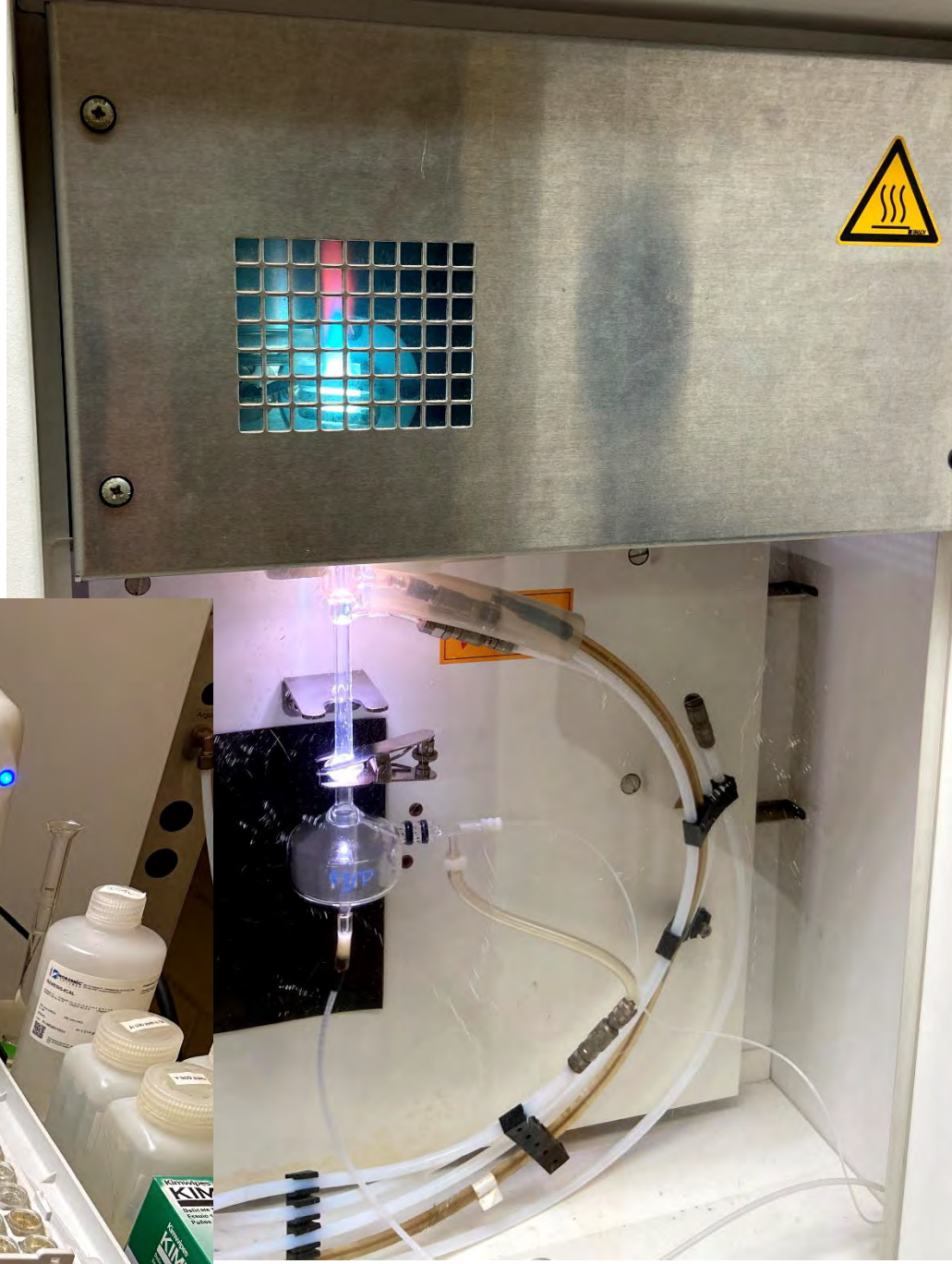
Nutrient Extraction - After sub-sampling the prepared soil, extracting solution is added. The soil is then shaken and filtered with the resulting extract transferred to an autosampler cup for nutrient analysis on an ICP instrument.

Nutrient Analysis by ICP-AES

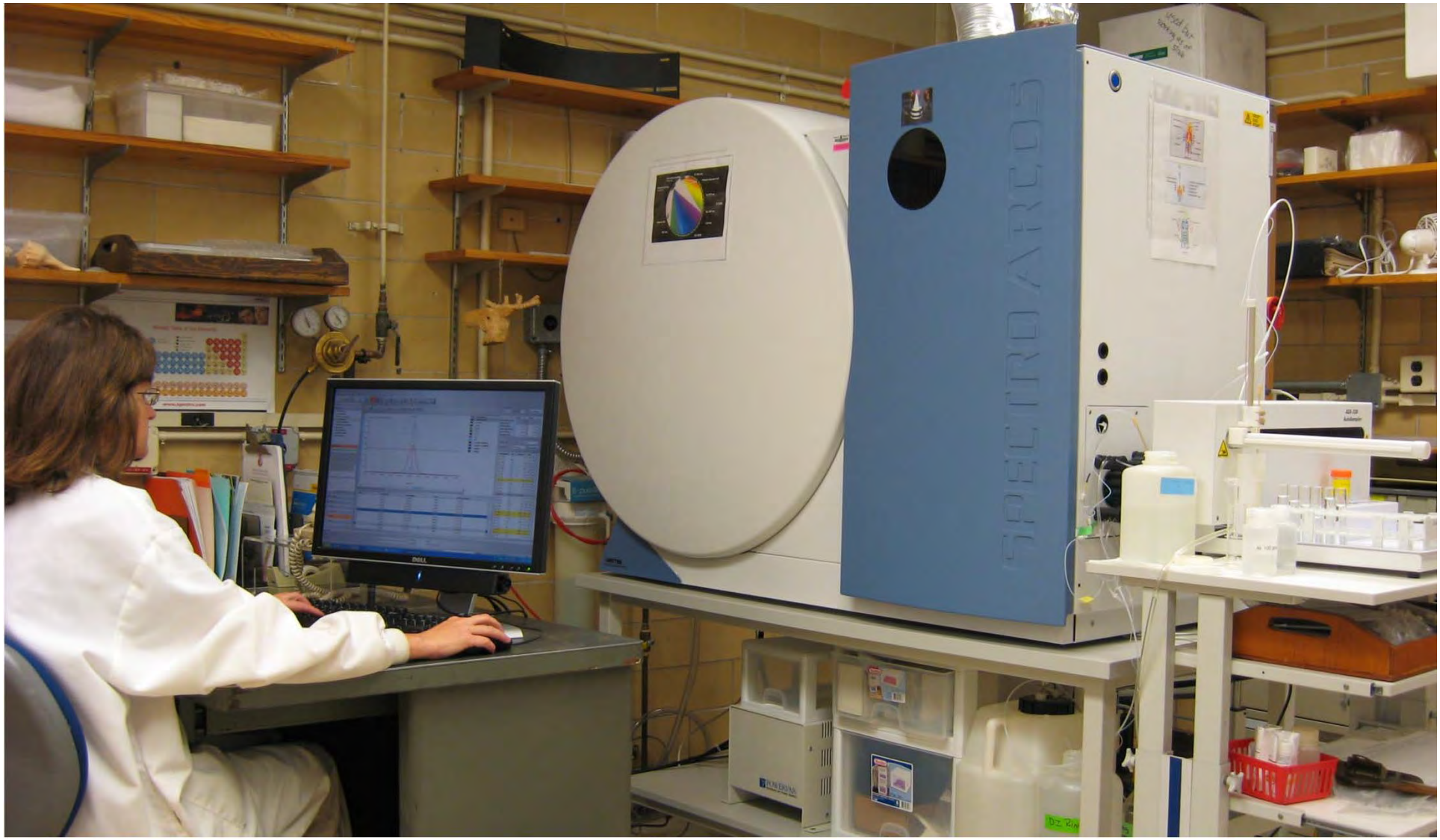


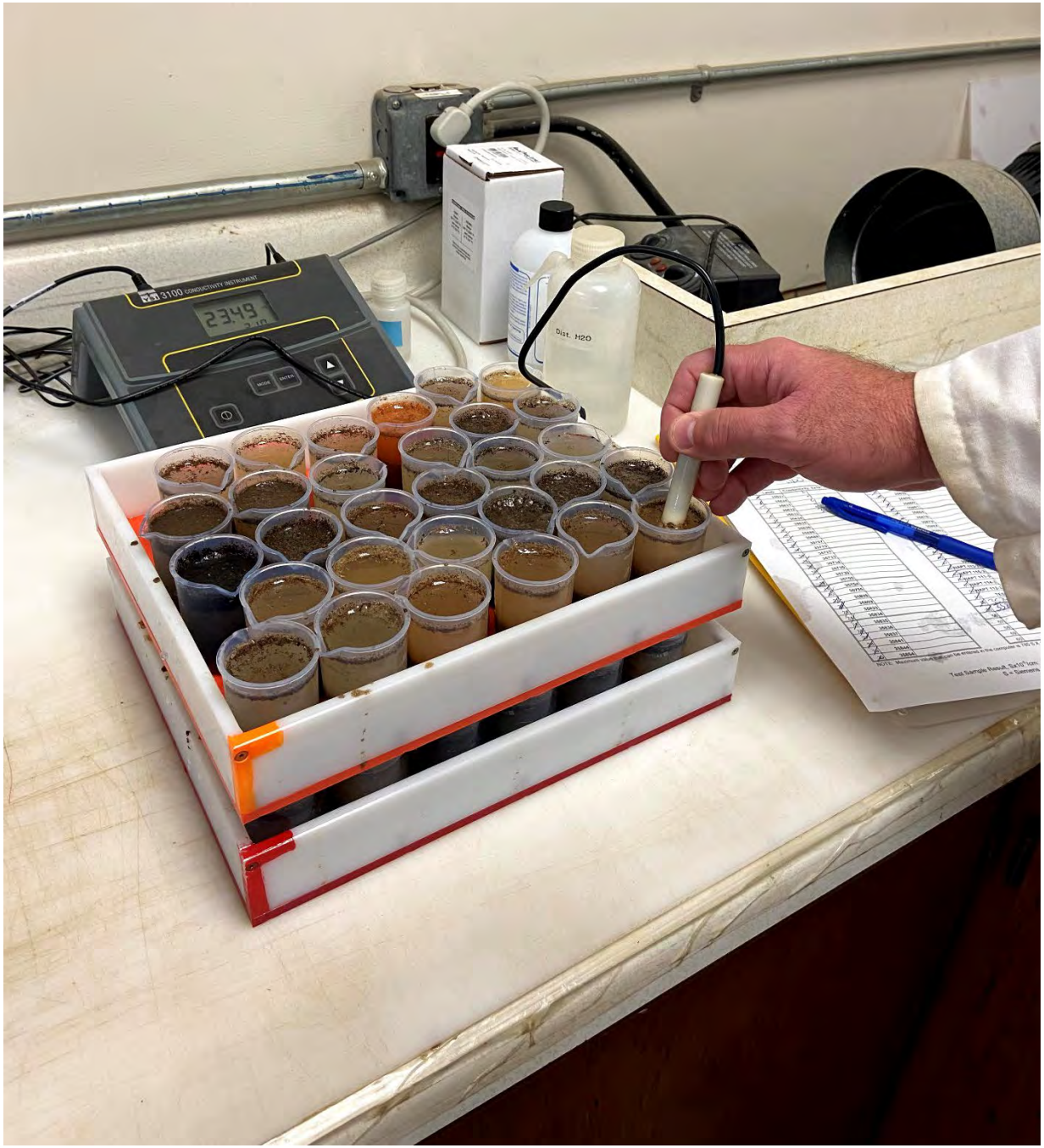
A closer view of sample extracts on an autosampler and the ICP instrument's plasma.





Second ICP-AES Instrument

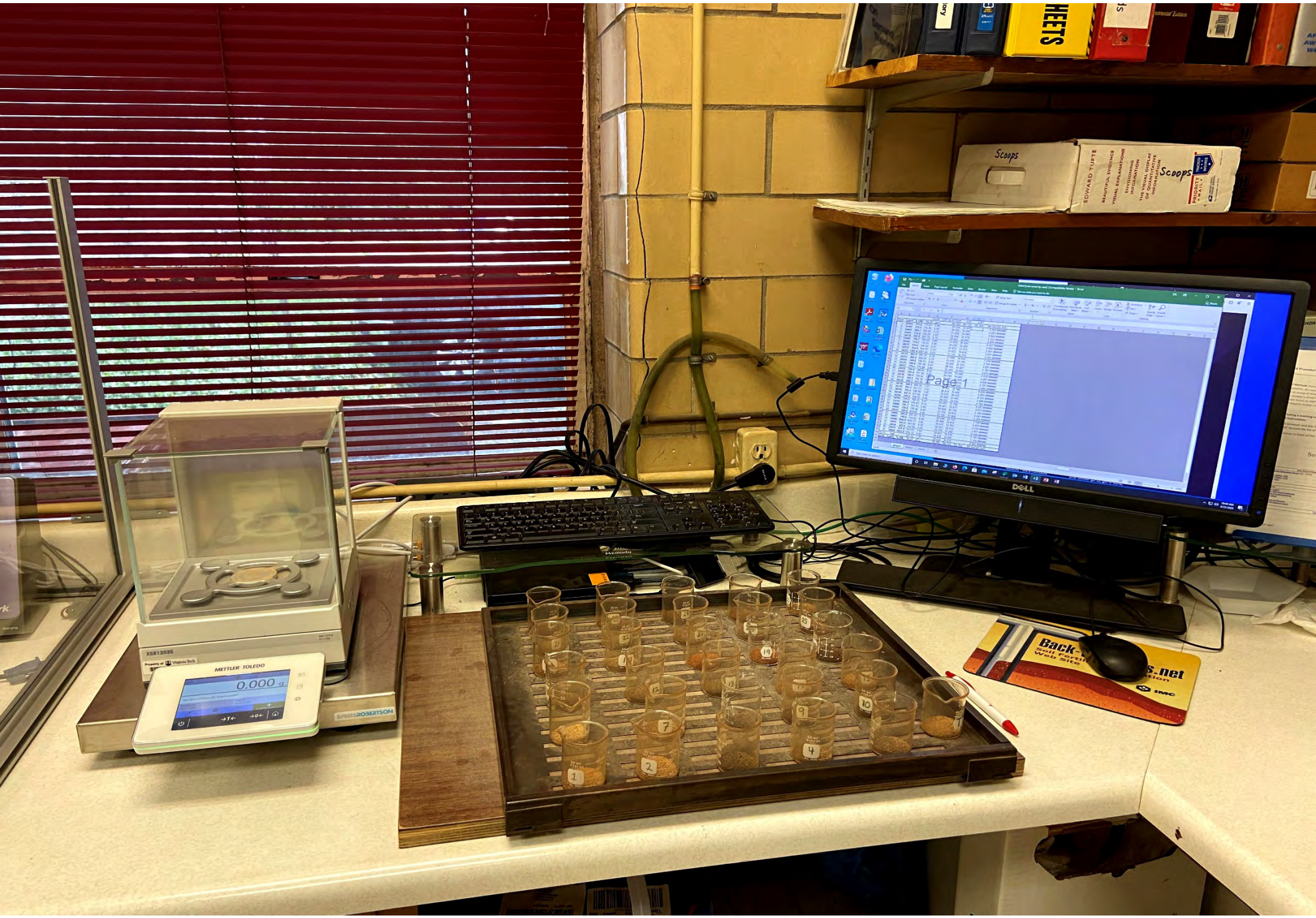




Soluble Salts test using a Conductivity Meter

Organic Matter Digestion by Modified Walkley-Black Method

High-Temperature Oven for Organic Matter by Loss-On-Ignition Method



Balance for Soil Organic Matter (SOM) by Loss-On-Ignition (LOI) Weighing

Making pH buffer solution used to estimate soil acidity for lime requirement determination.

The lab's website has all of the Soil Test Notes that go along with reports, sampling instructions, forms, lab procedures, and example reports.

Lab's website **www.soiltest.vt.edu**

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QUICKLINKS | FEES AND FORMS | SAMPLING INSTRUCTIONS | REPORT NOTES | ABOUT OUR LABORATORY | MORE

State Soil Testing Lab

Virginia Tech Soil Testing Lab

Mission

The Virginia Tech Soil Testing Laboratory is affiliated with both Virginia Cooperative Extension and the School of Plant and Environmental Sciences, and analyzes soil samples submitted by the public and university researchers. Tests are performed to

VCE's web site → www.ext.vt.edu

Soil Testing Lab, Virginia Tech

Contact your local Extension office for additional information.