How to interpret your soil test results

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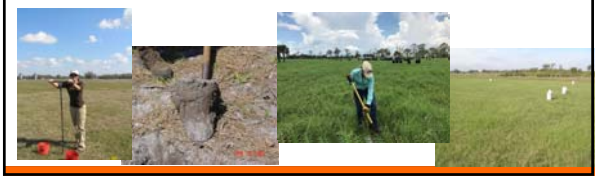


Purpose of Soil Testing

- Obtain a reasonably accurate measure of soil pH and plant available nutrient concentrations
- Make sound fertilizer/lime decisions
- Monitor long-term impacts of soil fertility program

"Chance of Error"

5 main components of soil testing

1. Soil sampling
2. Soil handling and submission to the lab
3. Laboratory analysis (samples preparation, extraction, analysis, report/recommendations)
4. Results interpretation
5. Fertilizer and lime recommendations

Most common mistakes and how to avoid them

1. Improper Sample Collection

- Test results are only as good as the sample taken
- Improper sampling may result in large spatial or seasonal fluctuation in soil nutrient concentrations
- The goal is to collect a composite sample that represents the area of interest

Most common mistakes and how to avoid them

How to Ensure Proper Sample Collection

- A composite samples should consist of a minimum of **15-20** individual cores taken at random over a given area
- If an insufficient number of cores are pulled for a composite sample, the sample results can be biased either too high or too low
- All individual cores should be thoroughly mixed together and a sufficient amount of sample should placed in a properly labeled container for lab analysis

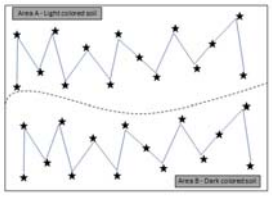
Don't discard your sample until the lab results are received

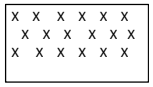
Most common mistakes and how to avoid them

How to Ensure Proper Sample Collection

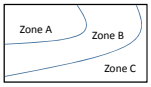
- Sampling design should account for differences in soil type, previous fertilization or management (fences, feedlots, etc.)
- Problematic areas (low forage production, stunt or yellowing)
- Sampling depth should be consistent (4 to 6 inches) across the entire field
- Sample handling (storage, contamination)
- **Keep accurate records**

Soil sampling approaches





Staggered pattern



Management Zones

Gridded pattern

Sample handling

2 most common "culprits"

Sample handling

Sample handling

Most common mistakes and how to avoid them

Time of the year

- Soil nutrients levels can change during the year, depending on soil temperature and moisture levels
- Samples should be taken at the same time each year so results from year to year can be compared
- The best time to sample is 3 to 6 months prior to spring fertilization or planting. If lime is needed, it is better to apply it during the fall to allow it enough **time** to react with the soil

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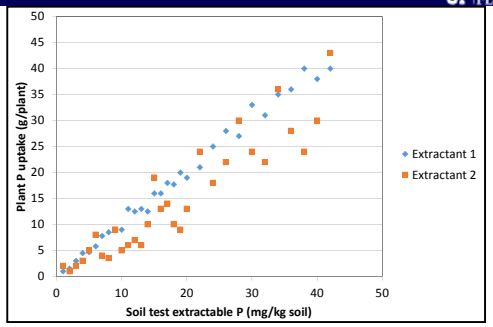
Most common mistakes and how to avoid them

2. Laboratory Selection

- Labs offer a wide range of soil parameters and test procedures
- Different goals (agronomic, environmental, architect/construction)
- Ensure the lab is accredited [North American Proficiency Testing (NAPT); Agricultural Laboratory Proficiency Program (ALP)]
  - Differences in extractant solution

Extractant Solutions



Slide source: Dr. George Hochmuth

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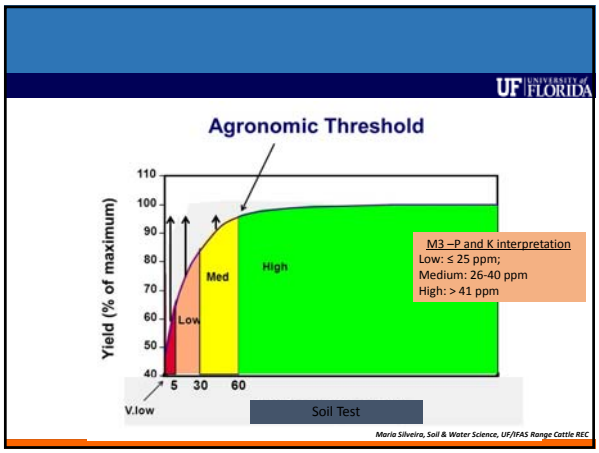
  - Differences in extractant solution
  - Differences in extraction procedure: shaking times, soil:extractant ratio, analysis procedure
  - Units reported (ppm, mg/kg, lb/acre)
  - Index interpretation (low, medium, or high)
  - "More" may not be better



Most common mistakes and how to avoid them

2. Laboratory Selection

Mehlich 3 is the standard soil test procedure in Florida

Lime recommendations are based on Adams-Evans procedure

Most common mistakes and how to avoid them

3. Laboratory Analytical Error

The best approach to identify analytical error is to compare current results with prior reports

- Drastic changes in soil test results (± 15% difference is acceptable)
- Some soil characteristics are variable both in time (temporal) and space (location in the pasture or on the farm), t is best to sample at the same time each year
- Zero values
- Analytical discrepancies (high pH and low Ca levels)
- When in doubt, resubmit a new or achieve sample or contact the lab to repeat the analysis

Most common mistakes and how to avoid them

4. Fertilizer recommendations

Soil fertility approaches commercial vs. land grant university labs

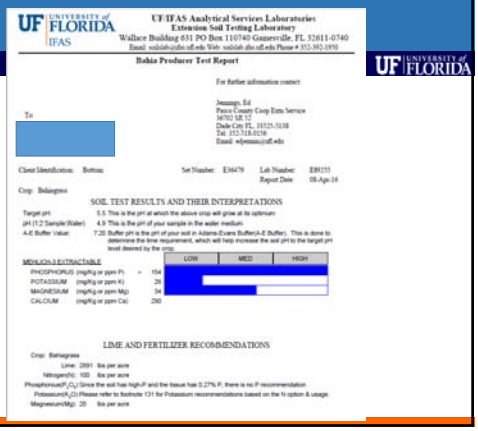
Most common mistakes and how to avoid them

- *Build-Up and Maintenance* : The goal is to build up the soil fertility level to the *high* category with additions of specific nutrients whose indexes were interpreted as *medium* or lower per the soil test. Nutrients removed with harvested crop should be replaced to maintain high nutrient status.
- *Basic Cation Saturation Ratio* (BCSR) : This concept was developed in the early 1940's and it attempts to maintain desired ratios of cations [potassium (K), magnesium (Mg), and calcium (Ca)] on the soil cation-exchange complex. Recycling of nutrients in the soils is not considered.
- Crop Nutrient Requirement (CNR): Soil tested medium or above for a particular nutrient can supply 100% of crop nutrient requirement

Most common mistakes and how to avoid them

Given the environmental conditions and coarse soil texture, most soils in Florida have limited ability to retain nutrients, therefore "build up" approach is not appropriate

Extensive research has been done to determine the relationship between soil test, fertilizer application, and yield responses ("Field calibration")



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Extension Soil Testing Laboratory
Wallace Building 631 PO Box 110740 Gainesville, FL 32611-0740

Bahia Producer Test Report

SOIL TEST RESULTS AND THEIR INTERPRETATIONS

LIME AND FERTILIZER RECOMMENDATIONS

Summary

- Soil testing is an important tool to determine the portion of the crop nutrient requirement that can be supplied from the soil
- Sources of error include improper soil sampling/handling, soil testing procedure, laboratory analysis, results interpretation, and fertilizer recommendations
- Collect representative soil samples
- Select a reputable lab that runs tests compatible with University of Florida fertilizer and lime recommendations
- Keep accurate records (sound/feasible soil sampling protocol, analysis report, and management records)
- Consult your local county extension agent or other university personnel

THANK YOU!

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