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We're on the Web!
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UF/IFAS: Science at work for you

The EREC Field Notes page, mailed with the June/July issue of the Palm Beach County Extension Agriculture Newsletter, featured the harvest schedule recommendations for Canal Point sugarcane varieties. Extra copies are available at the EREC.

Established by an act of the Florida Legislature on June 14, 1921, the Everglades Research and Education Center (EREC) in Belle Glade, Florida is an agricultural and environmental research and education unit of the University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS).

The Everglades Research and Education Center is distinctive in that it is the only academic agricultural research and extension education facility in the United States located on subtropical organic soils.

Economic Contribution of EREC Research

In October 2001, the Food and Resource Economics Department at UF/IFAS published the results of a study conducted by Edward A. Evans, Max R. Langham and Leo C. Polopolus titled Historic Analysis of the Economic Contribution of the Everglades Research and Education Center (EREC). These are some of its conclusions:

- A considerable amount of the early research focused on the need for good water control (drainage and irrigation). Research findings prompted a comprehensive soil survey of the EAA, cooperatively initiated in 1939 with the Soil Conservation Service. The results of this survey provided a basis for setting up recommendations for land use and management. This information, together with that available from EREC and the USDA Bureau of Agricultural Engineering, provided the input needed in the late 1940s for designing the Central and Southern Florida Flood Control program. This development has had the impact of stabilizing agriculture in the EAA and facilitated the later expansion of both agricultural and industrial activities.

- Mainly because of nutritional disorders, initial experimental plantings in the EAA failed. These failures provided a focus for research on crop production, fertilizers, and other soil amendments. Research on the use of minor elements, including copper, manganese, and zinc gave spectacular results. To many, this finding, together with those leading to the design of water management infrastructure, had the greatest impact on agricultural development in south Florida and provided the pillar on which all other research rests.

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UF/IFAS Everglades Research and Education Center

NEWS

July 2004
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Inside this issue:

EVERGLADES SOIL TESTING LABORATORY

The ESTL offers soil-testing for pH, phosphorus (P_w and P_a), potassium (K), calcium (Ca), magnesium (Mg), sodium (Na), silicon (Si), iron (Fe) and salinity (electrical conductivity). Organic matter determinations are available upon request. During the 2003-2004 season, the ESTL processed over 9800 soil samples (89% from growers, 11% from researchers) and performed over 26,000 chemical analyses.

See inside for the complete story.

From the Director's Desk:

Dear Community Members and Customers of the Everglades REC,

I have some new and exciting changes and updates to share regarding "happenings" at EREC. First I wanted to let you know that we have hired 8 students from the local high schools to work with our faculty this summer. Students have been recommended and selected from Glades Central H.S., Glades Day School, Pahokee Senior H.S., and Everglades Prep Academy. They are working in labs, greenhouses, and fields. They are also learning the scientific techniques that our scientists at EREC use to investigate key issues in the agricultural areas. We hope that by offering this opportunity to students we will be attracting new bright minds to the field of agricultural research and education, as well as acquainting our local schools and community with what we do at EREC.

In addition, EREC recently hired Lucritia Jackson, a recent FAMU graduate, for a summer research internship, sponsored by the Florida Agricultural Experiment Station.

EREC in the news! A recent article in the Palm Beach Post shared with the public the development of a new St Augustine grass that is both chinch bug resistant as well as slow growing. Chinch bugs can be a serious insect problem in turfgrass and cause large areas of dead or dying grass in your lawn. This new cultivar will prevent the problem from developing in a lawn or a sod farm and will reduce the number of insecticide sprays that are applied to control this pest. Additionally, it will save the consumer and the producer money as well as allow more environmentally friendly practices. From a homeowners' point of view this grass is very attractive because you do not have to mow as often, saving time and gasoline!

Two recent field days were conducted by Dr. Rob Gilbert, sugarcane agronomist. On May 26 he presented collaborative research with Florida Crystals on soil fertility amendments and crop rotations for mineral soils. On June 25 a second field day was held in collaboration with the Sugar Cane Growers Cooperative and USDA-ARS examining sugarcane harvest scheduling and newly-released varieties. These field days were aimed at increasing soil fertility and variety management options for growers. Grower flexibility is becoming increasingly important in the present sociopolitical climate (see policy corner).

On the 13th of May we had a well attended extension program conducted by our multi-county sugarcane agent, Dr. Curtis Rainbolt. He presented results from herbicide trials conducted by Dr. Andy Bennett. Additionally, Dr. Elise

Pearlstine, a member of Dr. Frank Mazzotti's research team at the Fort Lauderdale REC gave a very interesting presentation on the abundance of wildlife, particularly birds, in the EAA. We hope to continue to increase the involvement of EREC with this important work.

Finally I hope that all of you will drive in or at least drive by the Center and look at all the improvements we are making. We are investing in improving the grounds, the facilities, and the research fields on our property. If we could get the rest of our fields laser leveled, the back roads rebuilt, the canals cleaned, and the culverts repaired, we would be all set!

We may be asking for your help with some of these things as we would like our farm to look as good as some of yours! At least it is a goal.

Chris Waddill

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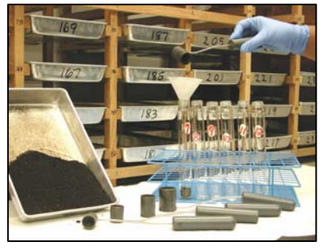
Everglades Soil Testing Laboratory ~ The Soil Analysis Process:

1. Collecting the soil sample

2. Submitting samples with analytical requests

3. Drying soils in trays prior to sifting

4. Measuring soil pH



5. Scooping a pre-set volume of soil for extraction

6. Adding a pre-set volume of the extractant to the soil

Soil samples are processed twice per week and can be submitted between 8:00 am and 4:30 pm, Monday through Friday. Results are available in 4 to 5 days.

The Mission of the Everglades Soil Testing Laboratory (ESTL) is to conduct soil testing in order to provide Everglades growers nutrient (fertilizer) recommendations for crops grown on organic soils. Fertilizer recommendations reflect soil-test interpretations that are calibrated against prior fertilizer rate and crop yield response field research.

When the UF Everglades Research Station opened for business in 1924, region-wide crop failures were endemic, and crop nutrition issues became immediate research priorities. By the late-1920s, micronutrients like copper, manganese, and zinc were shown to be essential for successful crop growth on raw peat Everglades soils. By the mid-1930s, practical nutrient management strategies were in place that solved the region's major soil fertility problems. Research interests then shifted towards soil testing. The ESTL was officially established in 1938, after preliminary soil-testing studies favored the adoption of hydrochloric acid (HCl) extractions to estimate soil nitrate-nitrogen (N), phosphorus (P), and potassium (K) levels. The HCl soil test was initially correlated with yields recorded from celery and grass (pasture) fertility trials.

The value of a calibrated soil test was recognized by early soil fertility investigators, who in 1939 provided a summary of their work at the Everglades Research Station:

"..... much time has been spent during the past year in the investigation of rapid laboratory methods for the determination of available nitrogen, phosphorus, and potassium in Everglades peat soils ..... these rapid soil tests are being used to correlate yields with available nutrients in field fertilizer experiments ..... the cooperation of growers is being enlisted in order that more data may be obtained to show the relation between soil tests, yields, and fertilizer deficiency symptoms ....."

In 1941, the visual estimation of soil-P (by color) and soil-K (by turbidity) levels was replaced with photoelectric instrumentation. In early-1942, HCl was discarded (inconsistent performance) in favor of an acetic acid extraction to estimate soil N, P, and K levels. This extraction was initially calibrated to nutrient levels recorded in sugarcane juice and shallu (Egyptian wheat) and corn leaf tissues.

In 1947, the soil-P water extraction (P_w) was adopted, following growing evidence that acetic acid gave inconsistent soil-P results when soil pH levels exceeded the "normal" (5.4 to 5.8) range. The P_w was initially calibrated against P concentration levels in celery stem tissues.

ESTL STAFF

Joan Sterling Lee: After migrating from Jamaica, Joan joined the ESTL in 1987 as a Chemist. Since January 1988, Joan has been the ESTL Senior Chemist and Lab Manager. Joan earned her Bachelor and Masters in Chemistry from the University of the West Indies in Jamaica.

Rani Ramlakhan: Rani joined the ESTL in September 2003 as a Chemist. She formerly worked as a Research Assistant for the Chemistry/Biochemistry Departments of Florida Atlantic University where she graduated with both a Bachelor and Masters in Chemistry.

Amanda Kimbrough: After leaving South Bay Growers, Amanda joined the ESTL in March 1995 as a Laboratory Support Aide.

Margaret Nelson: Margaret joined the ESTL in April 2002 as a Chemist for the Soil Research Unit. Margaret has been conducting research on 7 different soil-P extraction chemistries, using soils collected from sugarcane fertility trials. Margaret earned her Bachelor in Horticulture from the University of Florida.

Ron Rice: Ron has served as Director of the ESTL since 1996. Ron is currently a Research Agronomist with the Sugar Cane Growers Cooperative of Florida. He earned his Bachelor and Masters degrees in Biological Sciences from Stanford University, and a Ph.D. in Agronomy from the University of Florida.

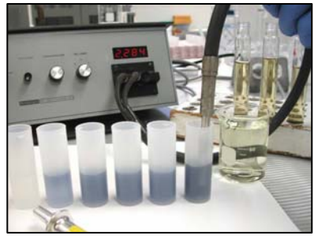
The P_w currently provides calibrated P fertilizer recommendations for major EAA crops such as sugarcane, crisphead lettuce, romaine, escarole, endive, celery, radish, and sweet corn. Calibrated K recommendations for the same crops are based on the acetic acid extraction developed in 1942. This extraction also provides estimates of soil calcium (Ca), magnesium (Mg), sodium (Na), and silicon (Si). In response to grower interest, the ESTL launched a more aggressive P soil-test in the late-1980s, using a modified acetic acid extraction (P_a). Recognizing the growing importance of rice as a rotation crop with sugarcane, the ESTL began offering soil tests for Si in 1991 and iron (Fe) in 1994.

In 1999, Wedgworth, Inc. matched state funding to redesign the old EREC Conference Center into a modern soil-testing facility, with significantly improved infrastructure that includes a second lab (Soil Research Unit) that supports soil-related research efforts by faculty, students, and other scientists. In 2000, Wedgworth, Inc. purchased a Varian Fast Sequential Atomic Absorption spectrophotometer with autosampling/autodilution and electronic data capture features, which significantly improved analytical and data management efficiencies. In 2003, the Agricultural Research Department at the Sugar Cane Growers Cooperative developed an ACCESS database linked to client field ID files, which has significantly improved sample tracking, data management, and automation (email-delivery) of client soil-test results.

EREC studies are currently underway to assess the merits of 7 different soil-P extraction procedures (P_w, P_a, modified P_a, Mehlich-1, Mehlich-3, Bray, and dilute calcium chloride), using sugarcane fertility trials for calibration purposes. This study will improve our understanding of soil-P chemistry within EAA organic soils and seeks to improve soil-testing protocols that are consistent with current soil conditions and modern high-yielding sugarcane varieties, an important extension service given the public focus on nutrient management oversight.

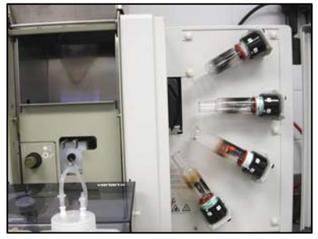
7. Mixing the soil+extractant

8. Filtering the soil+extract slurry to collect the extract for analysis



9. Measuring soil-P (blue intensity) with a probe colorimeter

10. Measuring soil-K, Ca, Mg, and Na with the Varian atomic absorption (AA) spectrophotometer.



11. Close-up of analytical lamps used in the Varian AA

12. Final step: Collating soil-test data into an ACCESS database to calculate fertilizer recommendations

The Policy Corner

"Sugar in Recent U.S. Free Trade Agreements"

Australia

Negotiations concluded on February, 2004. The agreement left intact Australia's access to the U.S. sugar market at 87,000 metric tons (mt) per year. Information on this treaty is available at: http://www.ustr.gov/new/fta/australia.htm

Central America

The U.S.-Central American Free Trade Agreement (CAFTA), including Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua, was finished on March, 2004. It relaxed U.S.'s Tariff Rate Quotas (TRQ) over the next 15 years, increasing market access from 97,000 metric tons in year 1 to 144,000 metric tons in year 15, thereafter growing at 2% per year into perpetuity.

In putting this part of the agreement into perspective, the Office of the United States Trade Representative has stated that:
- the first-year increase represents about one day's production of the U.S. sugar industry.
- the same increase amounts to 1.2% of U.S. sugar production and 1.1% of consumption, growing over 15 years to 1.7% of production and 1.6% of consumption by year 15.
- CAFTA would not have a destabilizing effect on the U.S. sugar program since its modest import increases are not beyond the "trigger" of 1.4 million metric tons of total imports established by Congress.

Additional information is available at: http://www.ustr.gov/new/fta/cafta.htm

Dominican Republic

Negotiations ended one month after CAFTA had concluded. In addition to its current TRQ access, the Dominican Republic was granted an initial TRQ of 10,000 metric tons of sugar, which represents 0.12% of U.S. sugar production. Imports are increased up over time consistent with the other five CAFTA countries. More information can be found at: http://www.ustr.gov/new/fta/Dr/advisor/index.htm

Note: General information on recent FTAs negotiated by the United States (nine in total) is available at: http://www.ustr.gov/new/fta
Forthcoming issues of this EREC Newsletter will contain brief discussions of other commodities relevant to the EAA, such as vegetables, rice, and citrus.