



Doctoral candidate Eduardo Chavez and Dr. Alan Wright provide an overview of experiments to a group of teachers who will incorporate the experiments into their curriculum

**M**ore than 25 middle and high school teachers from points around Florida participated in an International Year of Soils “Teach the Teacher” Workshop held at the University of Florida Indian River Research and Education Center in Fort Pierce on June 16.

The event was held in recognition of the United Nation’s Declaration for 2015 as the International Year of Soils. In an effort to educate all Americans about the value of soil to food production and water quality and the international agency is promoting the importance of soil to influence policy makers and the public.

As stated in a news release issued by United Nations officials, “More precious than oil - soil has no substitute and takes hundreds of years to form just a few centimeters.”

The local event was one of 14 statewide events sponsored by UF’s Institute of Food and Agricultural Sciences, (UF/IFAS) held throughout Florida’s prominent agricultural regions.



## THE SOILS SAMPLE DITCH



Photo by Libbie Johnson

Dr. Zhenli He explains the soils sample trench to workshop participants

Led by UF soil science research professors and UF Extension agents, high school instructors participated in lectures, hands-on experiments and agricultural tours to citrus production groves.

and Ecuador native, Eduardo Chavez, who is pursuing a doctoral degree under the direction of Dr. He.

### PROGRAM LEADERS

Hosting the Fort Pierce workshop was Dr. Alan Wright, Associate Professor of Soils and Water Science, who recently joined the University of Florida/IFAS Indian River Research and Education Center in Fort Pierce.

Joining him were colleagues Dr. Zhenli He, Professor of Soil and Water Science; Dr. Barrett Gruber, Assistant Professor of Citrus Horticulture, both representing the UF/IFAS IRREC; Libbie Johnson, Extension Agent II with UF/IFAS Escambia County Cooperative Extension; Ed Skvarch, UF/IFAS St. Lucie County Cooperative Extension Agent III;

### SOIL IS ALIVE

The event commenced with introductory presentations made by Dr. He, titled "What is Soil," and "Soil Horizons." Dr. He's presentations outlined the character of healthy soil and its foundation for food production.

During his presentation, Dr. He paused for a moment and said, "Soil is alive."

Dr. Wright and Ed Skvarch led a tour into a citrus production field operated by Dr. Barrett Gruber. The tour ended at a "soil pit" where participants viewed a soil horizon and its different levels from ground to about 10 feet under the surface. There they saw sand,



Photo by Libbie Johnson

Dr. Alan Wright and Dr. Barrett Gruber provided a tour of the citrus horticulture experimental grove



Dr. Alan Wright leads experiments

## SOILS PROTECT THE ENVIRONMENT

clay and organic matter, or carbon layers in the soil.

Afterwards, Dr. Alan Wright presented "Soil Protects the Environment," an overview of how soil serves as a filter to clean the environment and water.

Dr. Wright told the group, "Soils retain nutrients in a form that is available to plants," said Dr. Wright. "This sustains crops and natural plant communities while reducing nutrients to water bodies so that they will not accumulate in water and cause pollution."

*"Soils retain nutrients in a form that is available to plants," said Dr. Wright. "This sustains crops and natural plant communities while reducing nutrients to water bodies so that they will not accumulate in water and cause pollution."*

## SOILS EXPERIMENTS



Extension Agent Libbie Johnson leads an introduction to a soils experiment

## SOILS EXPERIMENT FOR HIGH SCHOOL STUDENTS

Following Dr. Wright's presentation the group toured research laboratories at the IRREC and then participated in group experiments.

Libbie Johnson, assisted by Eduardo Chavez, demonstrated an experiment to the teachers they may add to their science curriculum.

Johnson explained the demonstrations were replicable for use when teaching high school students about soil texture and pH.

"The objective is to familiarize students with determination of soil textural classes using the 'texture-by-feel' method scientists use in the field," she said.

*"The objective is to familiarize students with determination of soil textural classes using the 'texture-by-feel' method scientists use in the field."*

## SOILS RESEARCH FOCUS AT IRREC



Photo by Libbie Johnson

Dr. Zhenli He provides a tour of the IRREC Soil and Water Science Laboratory

### SOILS MUST BE RICH TO PRODUCE FOOD

The instructors used sets that included red plastic cups, beakers, droppers and microscopes to look at a “ribbon” typically found in Florida’s clay soils.

“The longer the soil ribbon—the more clay will be present in the soil,” explained Johnson.

The group of teachers understood how sand and silt will not hold water for extended time periods—but clay soils will. Rich soil and clay are helpful to retain nutrients and to produce crops.

The science teachers used a triangular chart issued by the U.S. Department of Agriculture to identify various combinations of clay present in the soils they looked at.

Many of the teachers who were present at the event represented St. Lucie West Centennial High School and teach courses in many of the sciences.

St. Lucie West Centennial ninth grade environmental science teacher Donia Mustafa said, “We gathered a lot of great information for next year—it’s nice to see real-world applications taking place here at the UF (IRREC) center.”

## ENVIRONMENTAL SCIENCE INSTRUCTORS WILL SHARE VALUE OF SOILS



St. Lucie Cooperative Extension Agent Ed Skvarch observes a soil sample



Photo by Libbie Johnson

St. Lucie West Centennial Science Teachers are entrenched in the workshop about soils along the Treasure Coast

“We gathered a lot of great information for next year—it’s nice to see real-world applications taking place at the UF/IFAS (IRREC) center.”

Real-world applications that take place at the center are research projects conducted by Dr. Wright, Dr. He, and Dr. Gruber.

The three scientists collaborate on projects to protect soils in the Indian River region’s citrus production groves, where the world’s premier grapefruit is cultivated.

Extension agents Libbie Johnson and Ed Skvarch work directly with the state’s agricultural producers to apply the university’s cutting-edge research.

## ENERGYBEETS PRODUCE SUGAR WHICH IS CONVERTED TO FUEL



Science Teachers worked with UF/IFAS scientists and extension agents for a day-long workshop

## INTERNATIONAL YEAR OF SOILS

In announcing the International Year of Soils, Secretary of the U.S. Department of Agriculture Tom Vilsack said, "Healthy soil is the foundation that ensures working farms and ranches become more productive, resilient to climate change and better prepared to meet the challenges of the 21<sup>st</sup> century."

"Healthy soil is the foundation that ensures working farms and ranches become more productive, resilient to climate change and better prepared to meet the challenges of the 21<sup>st</sup> century."

## 2015, THE INTERNATIONAL YEAR OF SOILS



Photo by Libbie Johnson

Extension Agent Ed Skvarch leads workshop participants in a tour of the IRREC Teaching Garden

### FURTHER READING

Vislack noted that battling erosion is critical to soil and food protection. Following the Dustbowl, Congress recognized the value of soils to grazing, forest and production lands, after which time the Soil Conservation was initiated.

According to a 2006 Cornell University research finding, soil erosion costs the U.S. farming industry \$38 billion annually.

To read more about the International Year of Soils, reference the Food and Agriculture Organization of the United Nations.

<http://www.fao.org/soils-2015/about/en/>