

Texas Tech Using Remote Sensing Technology to Improve Peanut Crops

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(PhysOrg.com) -- Researchers are using remote sensing to estimate biophysical characteristics including ground cover and yield.

The economic wallop of Texas peanut products is getting an aerial boost this season from Texas Tech University.

Researchers are using a special airborne multispectral [remote sensing](#) system on an experimental peanut crop in nearby Brownfield, a small farming community. The hi-tech gear is used to estimate the plant's biophysical characteristics, including ground cover, leaf area, biomass and yield.

“Improved monitoring of peanut crops could one day help growers have a healthier crop through improved irrigation practices and pinpoint application of fungicides,” said Stephan Maas, a Texas Tech professor of agricultural microclimatology with joint appointment with Texas AgriLife Research. Maas is a participant in the project, along with Texas Tech Postdoctoral Research Associate Nithya Rajan.

Remote sensing describes the science of identifying, observing and measuring an object without making direct contact with it. The process involves the detection and measurement of light in different wavelengths reflected by the object.

In this instance, the remote sensing system contains high-resolution digital cameras fitted with narrow band-pass filters that allow the

cameras to acquire imagery in specific wavelengths of light related to plant growth. The cameras are carried by a single-engine Cessna 172 aircraft operated by Plainview-based South Plains Precision Ag Inc.

It's the first year Texas Tech remote sensing experts and peanut breeding specialists from New Mexico State University have used the method on peanuts and, so far, both are excited about the results.

“Development of relationships between biophysical characteristics and remote sensing data could allow routine monitoring of peanut crop growth and yield potential in producers’ fields,” said Naveen Puppala, a peanut breeder with New Mexico State University’s Agricultural Science Center at Clovis. “With more research on remote sensing, it will help the growers to identify the correct time to irrigate their crops.”

Digital data taken from Texas Tech’s remote sensing imagery has already been used to calculate vegetation values - including what’s technically called the normalized difference vegetation index and the perpendicular vegetation index - for the peanut canopies growing in test plots. The two indicators are used to measure the peanut plant’s growth and leaf canopy density.

“Growing the most cost efficient peanut possible is vital to the survival of Texas peanut production,” said Shelly Nutt, executive director at the Texas Peanut Producers Board. “Maximizing irrigation efficiency is key to peanut production profitability.”

Georgia leads the nation in peanut production, followed by the next-largest grower, Texas. Last year’s peanut production was record breaking with the largest crop on record along with the highest average yield on record. Total U.S. [peanut](#) production for 2008 was estimated at 5.1 billion pounds.

Provided by Texas Tech University

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