

Alabama Farmers Wheat and Feed Grain Committee

Title: Airborne Imagery for Rapid Crop Productivity Assessments

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Location: Tennessee Valley, Upper Coastal Plain

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This project was conducted on Paul Clark's farms in Decatur, Alabama. The two corn fields were located approximately 10 miles apart and have received low, medium and high nitrogen treatments corresponding to 90, 130 and 160 lbs/A, respectively. During the 2005 growing season, a total of 60 depth soil samples at 0-15, 15-30, 30-45 and 45-60 cm were collected from low, medium and high management zones on 03/14/05 (before any fertilizer was applied), 07/22/05 and 12/15/05. The soil samples were analyzed for pH, N, C, P, K, Ca, NO₃-N and NH₄-N. Also, corn leaves were sampled on 07/22/05 and analyzed for C, N, K, Ca, Mg and other essential nutrients. InTime (InTime Inc.), an imaging company, made digital images of the corn fields on May 1; June 14-16; July 26 and September 5, 2006.

In general, our data showed that the mean values of pH, P, K, Mg, Ca, N, NO₃-N and C of the topsoil (0-15 cm) were significantly different ($p=0.05$) from the other depths. They all decreased as soil depth increased except Mg that increased with increasing depth, and NO₃-N that did not follow any of these patterns. Although the variability of many of the nutrients analyzed can be causes for the actual variable corn yield observed in the fields, correcting soil pH variability by application of liming material might significantly optimize corn production. More needs to be done in image analysis, constraint identification and prescribing corrective measures to fully exploit precision farming.