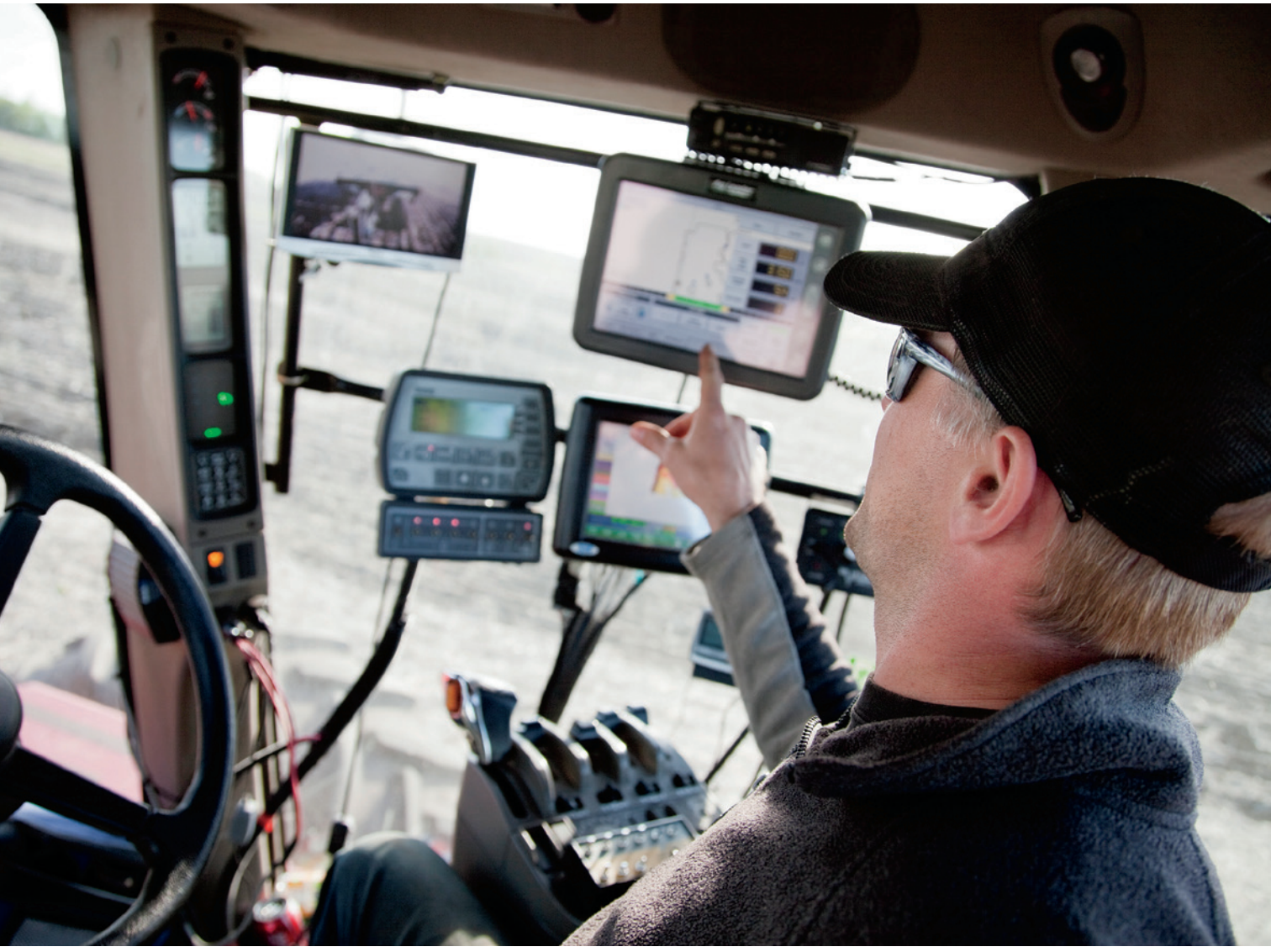
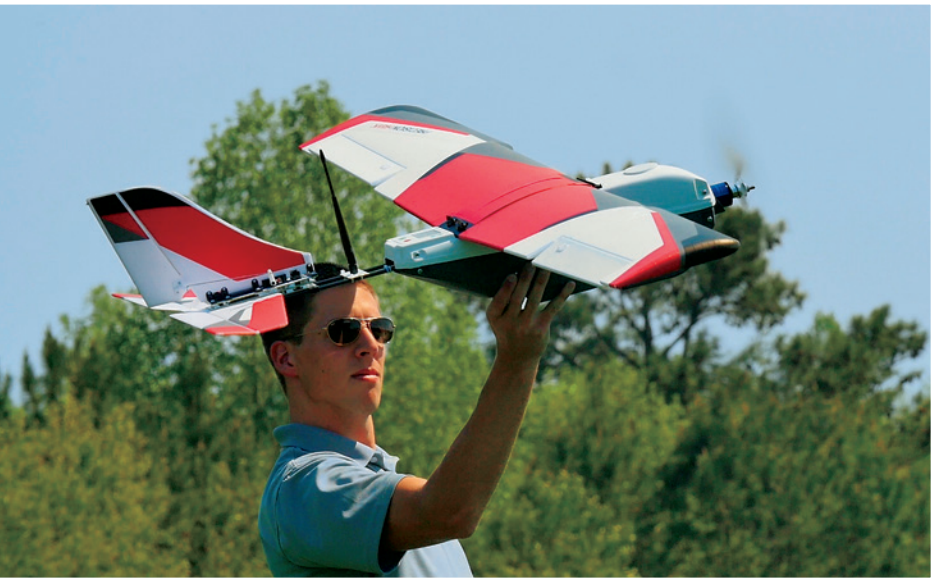
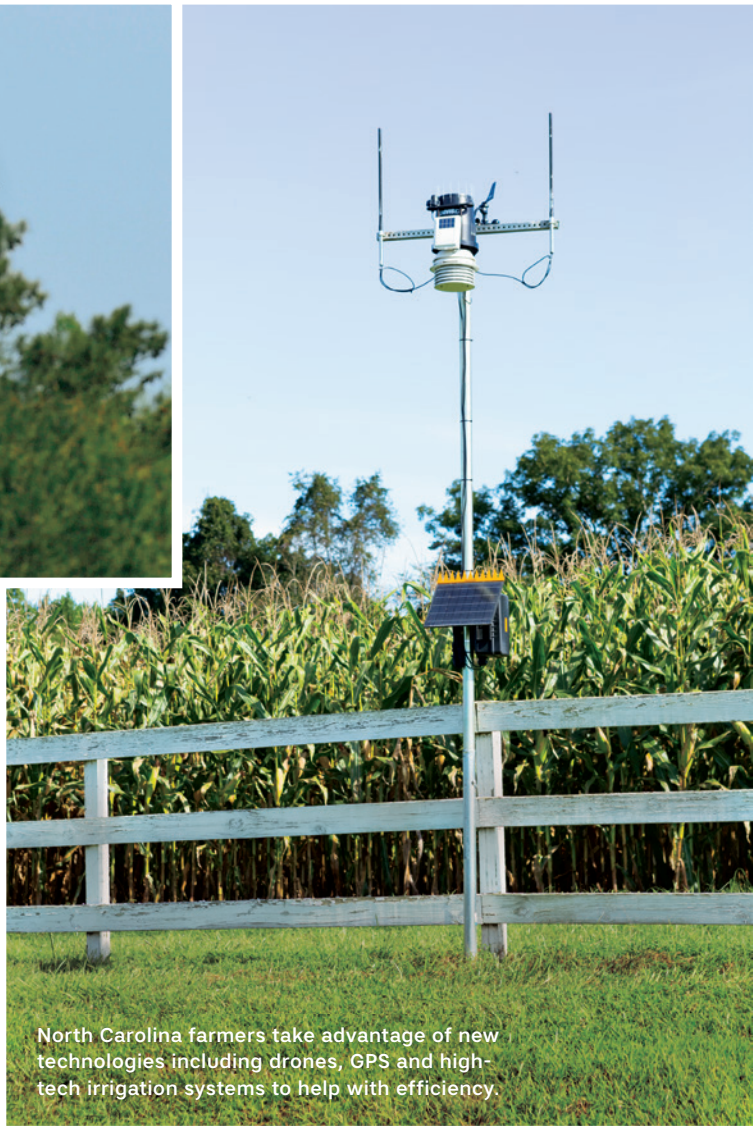


TECH Savvy

North Carolina growers make use of top-of-the-line ag technologies



ISTOCK.COM/LIVINGIMAGES, MIKOLETTE | DRONE: PRECISIONHAWK INC
IRRIGATION TECH: MICHAEL LOBIONDO



North Carolina farmers take advantage of new technologies including drones, GPS and high-tech irrigation systems to help with efficiency.

Farmers across North Carolina are embracing advanced technologies designed to improve yields while making their operations more sustainable and efficient.

In addition, new technologies are in the works that may continue to positively transform the state's agriculture industry, making it easier than ever for growers to conserve natural resources as they enhance and refine their operations.

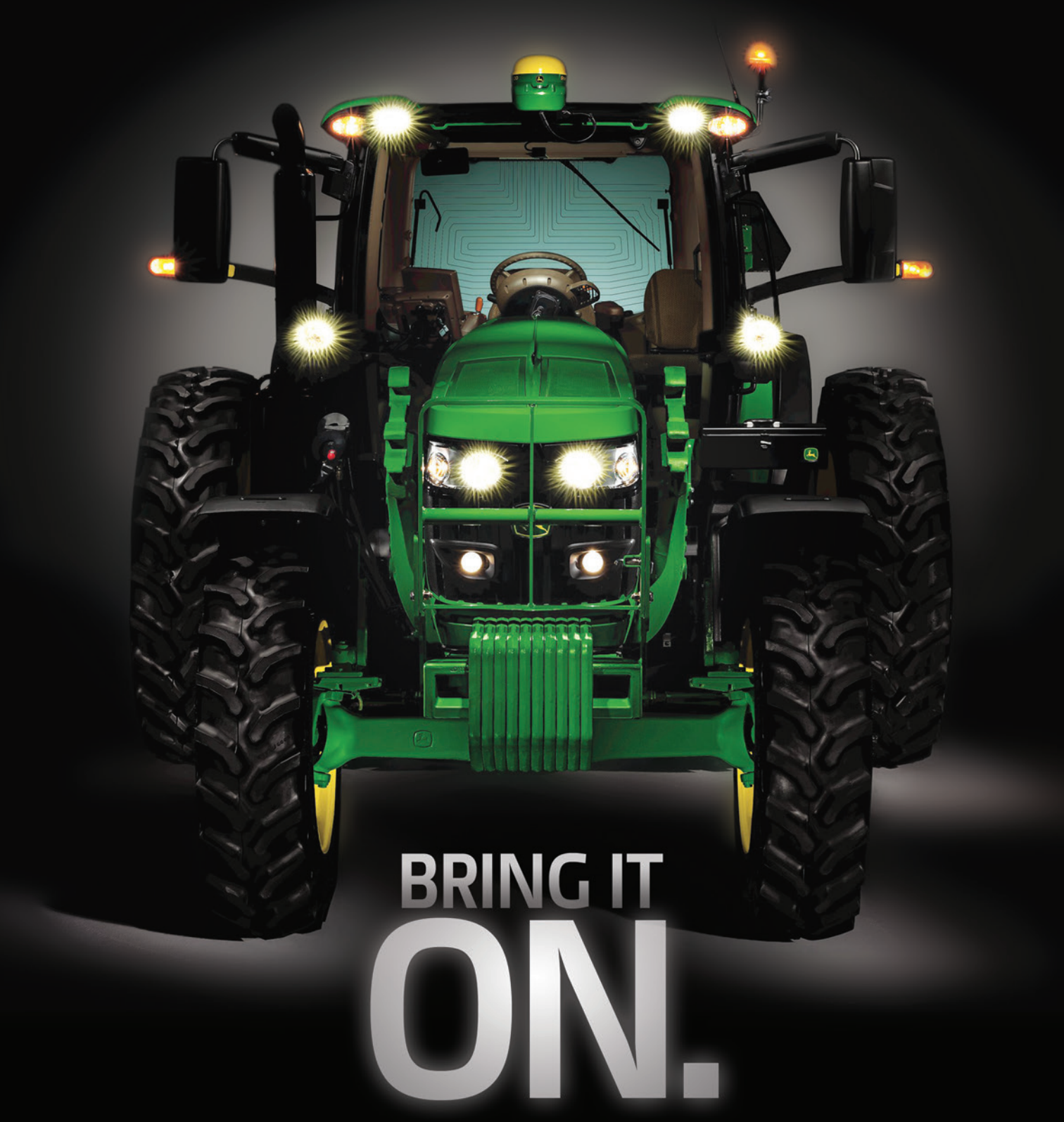
Drone Technology

Based in Raleigh, PrecisionHawk produces easy-to-operate unmanned aerial vehicles – commonly referred to as drones – which include sensors that capture aerial images at sub-inch per pixel resolution and can detect hundreds of bands of light, exposing problem areas not visible to the human eye.

PrecisionHawk's software gives drones the ability to fly autonomously as well as collect, process and analyze images that provide important information.

"This data gives our customers valuable, actionable information they can use to make management decisions," says Dr. Bobby Vick, an agriculture enterprise solutions executive for PrecisionHawk who holds a Ph.D. in agricultural engineering. "For example, our vegetative analytics produce a grid of polygons across a field with information about what's in each polygon, giving farmers an in-depth look at how their field is responding. The farmer can then combine his or her knowledge with the data, create a prescription and apply the correct input, such as fertilizer or water, to the area that needs it. This saves farmers an incredible amount of time."

Dr. Vick says PrecisionHawk's software can also analyze the yield



potential of a field and count existing plants, helping growers determine if they should replant crops in specific areas after instances of flooding or disease.

"There are scenarios in which a farmer needs to assess damage for insurance claim purposes, and we're able to provide a much more objective and quantified assessment of the extent of the damage or stress in an area than traditional field scouting allows," Dr. Vick says.

New Technologies

Agricultural technology is continuing to advance, and Dr. Raju Vatsavai, an associate professor in the computer science department at NC State University in Raleigh, predicts farmers will soon have access to new tools and technologies.

Dr. Vatsavai points to recent advances in sensing technologies coupled with big-data analytics, which are helping farm technology companies make farming more efficient and environmentally sustainable.

For example, he says ground sensors combined with thermal-sensor data from remote sensors can monitor and predict soil moisture, helping large-scale farmers schedule irrigation systems at the right time and location.

Additionally, emerging agricultural technology companies are experimenting with robots and artificial intelligence. Startups across the U.S. are developing image recognition algorithms that can detect and classify plant pests and disease more accurately than humans, for example, as well as creating machine vision systems to measure crop populations and detect weeds.

"Unfortunately, we can't increase the land for agriculture, and that leaves us with the only option of increasing agricultural productivity by reducing energy and water footprints," Dr. Vatsavai says. "Modern sensors, drone technologies and big-data analytics by utilizing modern artificial intelligence technologies provides great opportunities for farmers to improve their productivity. Digital agriculture, which combines these technologies for precision farming, holds the promise of increased productivity for farmers as well as a better environment and produce that's higher in quality and cheaper for consumers."

– Jessica Walker Boehm

> "This data gives our customers valuable, actionable information they can use to make management decisions."
>
> **Dr. Bobby Vick,** *PrecisionHawk*