



Pride *of the* Plains



Agriculture & Energy Drones give farmers bird's-eye view of land

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Jerod McDaniel owns approximately 10,000 acres of farm and ranch land in the Oklahoma Panhandle southwest of Guymon. Depending on the season, he runs 500 cows, plus calves, yearlings and bulls, and farms thousands of acres of corn. In 2016, he bought a DJI Phantom 4 drone to help him with various ag-related tasks.

“I think everyone who gets a drone does the same things with it at first,” McDaniel said, “take videos, fly it for hours — you know, sort of play around. I did all that, but at some point I figured out that it’s another tool around the farm.”

In May 2017, after a blizzard on the first of the month, McDaniel used his drone to look for cattle lost in the snow. After a hailstorm in the spring, he used to same drone to look for leaf damage to his corn crop, which saved him walking and driving time all around the property.

“It doesn’t have enough applications that it would replace an employee, but it sure does make one person more efficient,” he said.

What’s possible

McDaniel is among a growing number of farmers and ranchers who are experimenting with drones in agricultural applications. Mike Komp, a program manager in ag technology at the Noble Research Institute in Ardmore, said the organization started to see more farmers and ranchers engaging with drone technology in 2017.

“Mostly they wanted to see what’s possible with drones,” Komp said. “Most of the applications are based on sensor technology, and the sensors are either built into the drone or can be added like a lot of plug-and-play technology.”

Komp said there are four basic sensor groups: general visual imagers (cameras), multi-spectral cameras, thermal cameras, and LiDAR (Light Detection and Ranging) sensors. The first category is the most affordable, as it’s basic digital camera technology. The second category is useful in crop index and plant health applications, but the third—thermal cameras—is where the industry is bogged down right now due to federal regulations.

“It’s against current FAA regulations to operate commercial drones at night,” Komp said. “The thermal applications — finding livestock after dark and security issues — are therefore prohibited by law.”

In addition to the after-dark restriction, commercial and recreational use of drones is limited to unassisted line of sight flying. In other words, if you can’t see it with corrective lenses or the naked eye, the drone is out of the legal operational range. This creates more than a few problems in agricultural applications.

“On a farm the size of mine, it doesn’t take long for the drone to be out of sight,” McDaniel said. “With only 30-40 minutes of reliable fly time, it’s difficult to cover everything if it always has to be within

sight. I have fields that range from 600 to 1,200 acres, and it's way faster to cover them with a drone than driving around in a pickup."

Future in agriculture

James Grimsley, founder and CEO of DII LLC, a "family of advanced technology companies," has worked with the state and federal government on issues related to drone technology. He said nighttime flying restrictions can be waived, but the process is not routine yet.

"The real holdup is that the FAA has not been able to move forward with remote identification," Grimsley said. "If the drone is out of sight, whose drone is it? What is its application – commercial or recreational? Basically, it's a standards conflict. We know it will get worked out, but it's difficult to get everyone at the table to agree to a set of standards."

According to Komp, the restrictions are not really slowing the development and deployment of drone technology related to ag applications. In fact, the deployment is likely to grow for one simple reason.

"The initial prices ranged from \$2,000 to \$5,000, depending on the technology, but now drones are hitting the \$500 to \$600 range," he said.

