BUSINESS

DATA TOOLS BOOST FARMERS' RETURNS BUT RAISE WORRIES

Monsanto estimates the market for providing farm data analysis could be worth $20 billion annually; farmers concerned about misuse

Dave Nelson plants corn Tuesday in rural Hamilton County. Nelson was one of two farmers in the country to beta-test the FieldScripts program through Monsanto, which uses data from the field to help cater planting prescriptions to specific parts of a field.

By Christopher Doering
Gannett Washington Bureau

When Dave Nelson climbed into his John Deere planter this spring to sow corn seeds across nearly 3,000 acres of land, the 39-year-old Iowa farmer was armed with a secret weapon: a precise, data-driven view of his operations that gave him an advantage over most farmers in the Corn Belt.

For the past four years, Nelson has been testing a technology from Monsanto known as FieldScripts, a program that uses soil information, yield data and computer algorithms to identify which patches of land, some only a few meters in size, could support corn seeds planted closer together.

The technology, which has recently been rolled out to farmers in Iowa and three other Corn Belt states, helped him squeeze an additional 8 to 12 bushels per acre last year above his recent 10-year

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VIDEO ONLINE

Fort Dodge-area farmer Dave Nelson talks about advances in agricultural technology and how they have changed the way he farms in a video at **DesMoinesRegister.com**.

Nelson uses an iPad to access the FieldScripts program through Monsanto. Mobile devices and faster wireless networks have provided a catalyst for gathering farm information and increased its usefulness.
CHARLIE LITCHFIELD/REGISTER PHOTOS

DATA

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average of 195 bushels per acre. The result was up to an extra $50 for each corn acre, or about $150,000 throughout his operation — revenue that would have otherwise gone unclaimed.

"I'm maximizing every kernel I put in the ground," said Nelson, who farms with his dad near Fort Dodge. "Every farmer is going to say, 'Oh, I've got data,' but ... how many farmers can say, 'I'm putting the data to work in every aspect of my farm?' "

Agribusiness giants such as Monsanto and DuPont Pioneer are spending millions of dollars to help farmers mine ever-increasing amounts of data from their fields through "precision agriculture" technology to help them boost yields, lower their costs and reduce their risk, all the while increasing the amount of revenue they squeeze out of every acre.

While farmers have started to embrace the promise of the technology, they have grown increasingly concerned that the data about their operations could be sold to traders or commodity brokers, even though no cases of abuse have been found. Other growers worry their data could wind up in the hands of other farmers or be used by companies to peddle more seed and fertilizer and set prices because they'll know more about how much farmers will be using.

Agribusiness companies have promised the farm community they would protect the data and not misuse it.

"We're real concerned about who gets access to that information, what they would be allowed to do with it once they have it," said Scott VanderWal, South Dakota Farm Bureau president. "We're too early in the process to see any unintended consequences yet, but we have to think ahead to figure out where this is going and make sure we don't have any."

The American Farm Bureau Federation has said data collected from individual farms is valuable and should remain the property of the farmer. The country's largest farm group hosted a meeting in April in Kansas City with Monsanto, DuPont Pioneer, Deere & Co. and other agricultural companies to agree upon a set of standards to protect agricultural data gleaned from growers' fields.

While participants during the daylong meeting agreed the data belongs to the farmer, they still need to reach a consensus on how the information can be shared. Further meetings are planned for later this spring.

Dave Nelson plants corn seed Tuesday in rural Hamilton County. Nelson says his use of Monsanto's FieldScripts program is "maximizing every kernel I put in the ground." CHARLIE LITCHFIELD/REGISTER PHOTOS

Nelson loads corn seed into his planter. Precision agriculture technology helped him squeeze an additional 8 to 12 bushels per acre last year above his average of 195 bushels per acre. The result was up to an extra $50 for each corn acre.

Agriculture Secretary Tom Vilsack said in an interview last month that even though he was optimistic the burgeoning amount of farm data could help farmers grow more while helping the environment by reducing the amount of fertilizer and water being used, he said companies need to do more to quell industry concerns.

"Agribusiness needs to be deeply concerned about the skepticism that most folks have about the privacy that is associated with the decisions that they make or information that is gathered on their farm," Vilsack said.

The new products and services are developed by taking samples from a field to show the topography and characteristics of the soil, such as its nutrient content. Additional information such as weather patterns or yield trends from previous growing seasons are included to help a farmer select the seed that is best for a particular plot in a field, determine how much of it to use, and establish how much fertilizer and chemicals they need and when to apply them.

To be sure, farmers have been collecting data and making decisions based on their own information and observations in the field for years. But smartphones, iPads, apps and faster wireless networks have provided a catalyst for the information-gathering and increased its usefulness.

After decades of growth generated predominantly from sales of seeds and chemicals, DuPont and Monsanto have made acquisitions and engaged in partnerships to grow their data-technology business, hoping to gain an early advantage over their competitors in the promising field. Monsanto has estimated the market for providing farm data analysis could be worth about $20 billion annually.

"This is just another component of where each organization can differentiate and try to get ahead," said Paul Schickler, president of DuPont Pioneer, based in Johnston. "Whatever we can do to bring more information and predictability and knowledge ... the better we can do in prediction of seed performance. That has been the holy grail for decades."

DuPont Pioneer is rolling out a new data platform called Encirca to help growers use their data to improve crop production and assist them in better using seed, nitrogen and water. DuPont has estimated Encirca services could generate more than $500 million annually for the company. It also launched a free service in March that allows growers to use a mobile-enabled information platform tied to their iPad or other device that organizes crop observations and gives them access to Pioneer expert advisers if needed. Farmers can upgrade to a subscription service that adds field-specific weather forecasts, market analysis and grain trading capabilities.

DuPont Pioneer also has struck an agreement with the University of Missouri and the USDA to pool soil mapping resources and technologies to help growers more sustainably improve crop yields through better nitrogen application management and other field input planning. In November, DuPont Pioneer reached a deal with agribusiness giant Deere & Co. that will let farmers see data that's been collected on their farms in a few minutes, rather than weeks or months.

At the same time, Monsanto, the world's largest seed company best known for its Roundup herbicide and genetically modified corn and soybean technology, introduced its FieldScripts service this year in four major corn-producing states — Iowa, Illinois, Minnesota and Indiana — after testing it with farmers such as Nelson since 2010. And in October, Monsanto spent nearly $1 billion to purchase the Climate Corp., a provider of hyper-local weather monitoring and data models to farmers, that the seed and chemical company has combined with its FieldScripts technology.

FieldScripts users on average saw their corn yields rise by 5 to 10 bushels an acre, which translates to between $25 and $50 per acre based on current prices. The St. Louis seed company, which expects to broaden FieldScripts for corn across the four states next year before expanding it to other states, has planned similar services for soybeans in a few years.

While revenue from data-driven technologies such as FieldScripts is not contributing much yet to growth and earnings, Anthony Osborne, the Climate Corp.'s vice president of marketing, said Monsanto is optimistic the new technologies can have "a significant impact on the company or we wouldn't be resourcing it at the level that we have." Monsanto generated close to $15 billion in net sales during its 2013 fiscal year, with 70 percent coming from its seed and genomics business.

"We view this as a platform that is as important to Monsanto as the biotech (one)," Osborne said.

Monsanto is operating its precision agriculture business separately from its commercial seed business. Osborne said the agribusiness giant's seed selection technology will suggest a competitor's product if it is found to be better for the farmer's operation. Not doing that would undermine the technology and Monsanto's credibility in precision agriculture, he said.

"If you think about this as a platform to provide expertise to growers, it has to work that way. And so as you build models and you have the data, you make the best recommendation for a grower regardless of what that brand of seed or that herbicide or that fungicide would be," Osborne said. "You want to make the most sound recommendation that puts the grower in the best position possible."

HOW MONSANTO'S TECHNOLOGY WORKS

The farmer provides the necessary data (yield history, soil conditions, etc.) to a local certified dealer; Monsanto crunches the data and suggests to the farmer which three corn hybrids are the best match for the grower's particular field conditions. The data are then sent back to the farmer and uploaded into his planter. The process to create a "prescription" for the farmer takes less than a month. During the growing season, Monsanto offers farmers another application that analyzes soil moisture content based on rainfall and the growth stage of the crop to help them determine how much fertilizer they need to apply, among other recommendations.