New app helps keep fertilizers and pesticides in place

The Field Application Resource Monitor (FARM) employs high-resolution weather forecasting to advise farmers on when to apply fertilizers and pesticides so that the chemicals aren’t washed away.

FARM is more than just a fancy weather app, according to Aaron Wilson, CFAES climate specialist and FARM project manager.

“It allows you to specify the location of your field in high resolution,” said Wilson, who has a dual appointment with Ohio State’s Byrd Polar and Climate Research Center. This means the app can provide forecasts that are accurate within 1.5 miles.

“The app then provides guidance on the best time to apply fertilizers and manures, based on the precipitation forecast,” said Wilson.

However, the app’s most unique feature is that it draws on hard-to-find, historic weather forecasts, said Elizabeth Hawkins, an OSU Extension agronomist.

“This feature gives farmers the ability to look back at the forecasts that were available when they applied the fertilizer,” said Hawkins.

Ohio law prohibits farmers from applying fertilizers if the forecast calls for more than a 50 percent chance of rain.

If a forecast is wrong, historic data can prove that the farmer didn’t violate state laws on applying fertilizer or manure and in fact, was operating in accordance with the forecast that was accurate at the time of application.

FARM users can also set up accounts and receive detailed emails notifying them of real-time precipitation alerts and forecasts. The app can currently be viewed on most computers and mobile devices. Wilson anticipates adding phone alerts to further streamline the process of keeping farmers in the know.

The app also offers a significant environmental benefit by helping to prevent fertilizers and pesticides from washing into Ohio waterways.

“If you have too much phosphorus washing into rivers and eventually Lake Erie, you have a greater potential for harmful algal blooms,” said Wilson. “This is detrimental to the waterways farmers depend on.”

Farmers and the environment are codependent on each other. FARM allows farmers a unique opportunity to look after the environment in a way that also benefits them economically. For more, visit farm.bpcrc.osu.edu.
Farmers can now easily find out how much phosphorus, a key ingredient in fertilizer, is expected to drain off of their fields in storms.

Those losses are critical because any phosphorus a crop does not take up could wash off a field with rainwater, contributing to the growth of harmful algal blooms downstream.

On-Field Ohio is a new website (nutrientmanagement.osu.edu) including an online tool created by CFAES researchers that calculates how much phosphorus is expected to leave a given field as well as how much erosion will occur. Through the online tool, farmers can also determine how much of a difference changing how they manage a field can make in terms of potential losses of soil or phosphorus.

The tool uses a statistical model to calculate runoff and erosion losses based on the analysis of 14,000 runoff and tile drainage water samples collected from Ohio farms.

To use the online tool, you simply have to locate your field on an online map and click on options indicating how you manage that field. Then, you can get an estimate of how many pounds per acre of phosphorus and tons per acre of topsoil you’re expected to lose in a year.

“On-Field Ohio uses specific information about a given field to identify management strategies that will be most likely to reduce erosion and phosphorus runoff losses on that field,” said CFAES research scientist Elizabeth Dayton, who led the effort to create the online tool.

“Every farm has a unique setting and history, so it is ineffective to suggest sweeping recommendations for farm management that should be used in the same way by all farmers in every corner of the state.”

With On-Field Ohio, a farmer can see how much a management practice—such as planting a cover crop during the winter months, or incorporating any fertilizer or manure that’s applied to the land, rather than leaving it on the surface—could reduce the projected estimate for how much soil and phosphorus will run off that field. And that difference could be significant.

Every farm has a unique setting and history...

ELIZABETH DAYTON
Research Scientist, CFAES
FEBRUARY 2019  CFAES IMPACT

Locally grown in winter: 
CFAES works to extend local food production year-round in Ohio

Want to grow strawberries, tomatoes, peppers, and leafy greens year-round?
CFAES experts can help you learn how to do just that.

Using various season-extending techniques including hoop houses, high and low tunnels, and greenhouses, OSU Extension educators work with consumers statewide to help them grow more food locally at times of the year when production outdoors is not feasible. While not all crops can be grown at all times, it is possible for the backyard grower, community gardener, or urban farmer to produce fresh, local fruits and vegetables even in the winter, said Timothy McDermott, an OSU Extension educator.

“Locally grown food benefits the local economy as well as contributes to local food security,” he said. “Having fresh, local produce in the food system is beneficial both to growers for profit or personal consumption, and to consumers in providing fresher products that don’t require long-distance shipping.”

“It can also be beneficial to the local economy, with the dollars for production and consumption staying local. And an urban farmer using season-extending techniques can produce foods 12 months of the year that, in many cases, are higher in quality and have reduced pest and disease pressure.”

OSU Extension educators teach season-extending techniques in several Extension programs including the Master Urban Farmer training program, the School Garden Conference and Tour, and the Buckeye Institution-Supported Agriculture (Buckeye ISA) project, where income-sensitive families are taught how to grow and sell food using both traditional and season-extending techniques.

Extension has also partnered with the Mid-Ohio Food Bank Urban Agriculture Grant, which supports urban farmers in scaling up their production by funding projects such as irrigation and season-extending systems for urban farm production.

Extension also works with the U.S. Department of Agriculture’s Urban Agriculture Grant program by providing the education, training, and technical support for urban growers to install and utilize high tunnels to extend the growing season, said Mike Hogan, an OSU Extension agriculture and natural resources educator who works to increase the number of Ohio urban farmers.

A high tunnel, also known as a hoop house, is a temporary structure that allows growing during the year in a protected environment. It’s commonly used in season-extended plantings, where the structure captures heat passively to give a longer or earlier time frame in a growing season, McDermott said.

Greenhouses are also used and allow growers access to controlled-environment agriculture year-round.

More information on OSU Extension’s season-extending classes and programs, many of which are free, can be found by contacting the OSU Extension office in each of Ohio’s 88 counties, or by searching online at extension.osu.edu. ●
A deeper look at elevated phosphorus fields

Some farm fields have more phosphorus than their crops need. Called "elevated phosphorus fields," such fields may be at higher risk of contributing to Lake Erie’s harmful algal blooms.

That’s the premise of a new five-year study based in northwest Ohio’s Maumee River watershed. The study’s researchers hope to better understand those fields. How much phosphorus, an algal bloom-fueling nutrient, actually runs off of them? What management practices can limit that runoff while also maintaining yields?

CFAES scientist Jay Martin is leading the study. Partners include, importantly, watershed nutrient service providers and some of the farmers with whom they work. For more details, visit go.osu.edu/CdYg.

Conservation Tillage and Technology Conference

The annual Conservation Tillage and Technology Conference will be held March 5–6 in Ada, Ohio. Held at Ohio Northern University, the conference typically draws about 1,000 farmers, producers, and growers. The two-day event will feature workshops and presentations on nutrient management, precision agriculture, water quality, cover crops, no-till systems, and corn and soybean production. The event will also feature information on Lake Erie algal issues. Details can be found at ctc.osu.edu.

Bluer water, greener land

CFAES soon will be launching a program to help improve Ohio’s water. The proposed Water Quality Initiative, which is currently being finalized, will target the state’s critical water issues, including Lake Erie’s harmful algal blooms and urban stormwater runoff. Its aim is to boost the speed and impact of CFAES’ work on those issues, and in doing so, benefit water, farms, and people.

A task force of eight CFAES faculty developed the proposal for the initiative. Stakeholders from throughout Ohio, including farmers, policy makers, and representatives of agricultural and environmental groups, gave input for the plan. Visit waterquality.osu.edu.

C.O.R.N. Newsletter

Farmers, growers, and producers can find the latest information on Ohio crop production by viewing CFAES’ Crop Observation and Recommendation Network Newsletter, also known as the C.O.R.N Newsletter. The online publication is created by members of OSU Extension’s Agronomic Crops Team and offers information about in-season pest observations and predictions; weed, insect, and disease control options; production technology; crop development issues; and timely integrated pest management guidelines. View the newsletter at corn.osu.edu.