Guide offers farmers data to increase efficiency

Having access to data is crucial to helping farmers make the right decisions regarding production.

With that in mind, the authors of the eFields 2018 Report compiled the results of 95 on-farm studies throughout Ohio. The report, released recently by agronomists with The Ohio State University, is designed to help farmers and their advisors understand how new practices and techniques can improve farm efficiency and profitability.

Among other data included in the report is information on seeding rates for corn and soybeans; the best time to apply nitrogen on corn; and comparisons of yield on corn planted at varying row widths.

"Most of these studies came from questions farmers are asking," said John Fulton, precision agriculture specialist with OSU Extension.

“We consistently hear, ‘That study was done in Illinois or Indiana and I’m in northwest Ohio, so the results do not apply to my farm.’ These studies were all on farms in Ohio," said Fulton.

Farm data from 25 Ohio counties is included in the report. Topics researched include nutrient management, seeding, crop management, soil compaction management, remote sensing, and data analysis and management.

The data could lead growers to change how they’re managing their crops.

For example, a study on seeding rates and yields might convince farmers to lower their seeding rates on a particular crop, which could save the farmers money without reducing crop yields, Fulton said.

The report could also help producers be more environmentally sound with their fertilizer applications, he said, noting that the data also includes information on applying nitrogen at various times and using different methods to gauge the effect on crop yields.

The eFields 2018 Report can be downloaded from go.osu.edu/efields. Hard copies are available at OSU Extension county offices.
Some farm fields in northwest Ohio’s Maumee River watershed have more phosphorus than their crops can use.

Called “elevated phosphorus fields,” such fields might be at higher risk of contributing to Lake Erie’s harmful algal blooms.

That’s the premise of a $5 million, five-year study in which researchers hope to better understand those fields—and then reduce that risk—by forming new public-private partnerships.

Jay Martin, an ecological engineering professor in CFAES’ Department of Food, Agricultural and Biological Engineering, is leading the study. Martin and his colleagues plan to monitor and manage more than a dozen elevated phosphorus fields, all within the Maumee watershed.

To carry out the research, the team is partnering with nutrient service providers (NSPs) and some of the farmers with whom the providers work. The NSPs are helping to find farmers willing to aid with the study; the farmers, in turn, are allowing their fields to be used as sites for the study.

“This is a way that the agricultural community, Ohio State and U.S. Department of Agriculture researchers, and nongovernmental organizations can work together to address an important unknown,” said Martin, who is also a faculty researcher with the Ohio Sea Grant program and The Ohio State University Stone Laboratory. “By doing so, this will improve water quality while supporting agricultural production.”

Phosphorus runoff from farm fields is a significant driver of the harmful algal blooms plaguing Lake Erie. The blooms can be many miles wide, are sometimes toxic, and threaten recreation, tourism, drinking water safety, and people’s health. The Maumee River watershed, which empties into Lake Erie at Toledo, is the lake’s largest source of phosphorus loading.

Martin said the study has four main parts: recruit the partner farmers; measure phosphorus runoff on the farmers’ fields; use and evaluate best management practices on the fields—practices designed to reduce the fields’ phosphorus runoff while also maintaining their yields; and then, by helping form further public-private partnerships, expand the practices’ adoption throughout the watershed.

The study includes partners and supporters from CFAES, the Nature Conservancy, USDA’s Agricultural Research Service, Ohio State’s Center on Education and Training for Employment, and 12 Ohio agricultural organizations and businesses.

USDA’s National Institute of Food and Agriculture is funding the study, which started last fall and will run through summer 2023.

Read the full story at go.osu.edu/CdYg.
The fungus that produces vomitoxin can survive the winter, potentially putting this year’s crop at risk.

The extent of vomitoxin across Ohio and the rest of the Corn Belt led some farmers to receive a lower price for last year’s crop, Paul said.

High moisture levels spur the spread of vomitoxin in corn, which can cause people and animals to get sick, if consumed. The rainy summer and fall in Ohio and across the Midwest last year not only left more moisture in fields, but also delayed some farmers from harvesting.

Any corn left standing in wet fields becomes more susceptible to vomitoxin, Paul said.

Gibberella ear rot, a fungal disease that produces vomitoxin, also sucks nutrients out of corn, leading to smaller and lighter kernels, which can reduce yields and crop prices.

“Some farmers had problems with price discounts, and some had their grain completely rejected," Paul said.

Vomitoxin can cause animals, particularly pigs, to vomit or simply refuse to eat. If contaminated grain or grain products are consumed, this toxin can also make people ill, which is why the U.S. Food and Drug Administration has set strict limits on the amount of vomitoxin allowed in grain for human and animal consumption.

Moldy corn can, however, be used to produce ethanol. But the byproduct of ethanol production, typically a rich source of nutrients for animals, cannot be given to the animals, because it will have a high concentration of vomitoxin, Paul said.

The fields that were impacted by vomitoxin last year could still be a problem this year if the same or another susceptible hybrid is planted, Paul said.

As a result, it’s important for farmers to choose corn seed that’s resistant to the fungus, he said. Unfortunately though, no corn hybrid is totally immune to Gibberella ear rot.
Support Precision Ag Research Fund

Consider supporting the Precision Ag Research Fund (#315527) in the CFAES Department of Food, Agricultural and Biological Engineering.

Donations allow John Fulton, associate professor with CFAES, to compile his research on GPS-guided smart planting and multihybrid planting technologies into books made accessible to Ohio farmers for more accurate and productive yields.

Contact the CFAES Office of Advancement at 614-292-0473 or faesdevcom@osu.edu for details.

Get your updated crop field guide

Crop producers, check out the updated Corn, Soybean, Wheat, and Forages Field Guide at extensionpubs.osu.edu.

This handy, spiral-bound book can be taken with you into the field for insect, disease, and weed identification. It contains the latest fertilizer recommendations, broadleaf weed ID keys, and a manure sampling and manure applicator calibration section. Information on tar spot, a new disease to Ohio, is also included.

Written by OSU Extension specialists in partnership with Pennsylvania State University, the guide costs just $14.75.

Shrub could boost crops in drought-prone areas

The trick to boosting crops in drought-prone, food-insecure areas of West Africa could be a ubiquitous native shrub that persists in the toughest of growing conditions. CFAES soil scientist Richard Dick worked with an international team of collaborators to find that growing one type of shrub side-by-side with the food crop millet increased millet production by more than 900 percent. The study was published in the journal Frontiers in Environmental Science.

A story written about the study was also chosen as the coolest Ohio State science story of 2018. Read that story at go.osu.edu/shrub.