Ohio’s climate is shifting

“It was our wettest decade on record,” said Aaron Wilson, CFAES climate specialist.

For the past four decades, Ohio’s winters have been warming twice as fast as its summers. The state is getting more rainfall as well. 2019 was the sixth wettest year in Ohio and the 12th warmest.

On average, Ohio’s annual rainfall has increased 5%–15% since the early 1900s, with the largest increases in areas such as north-central Ohio where fall rainfall has risen by 31%, he said.

So far, this winter is proving to be warmer than average. December was Ohio’s 15th warmest on record, and January was fairly mild, too, Wilson said. Despite a brief cold spell, average temperatures in January across Ohio were between 8 degrees and 12 degrees Fahrenheit balmier than average for the month.

Additionally, snowfall in much of Ohio is 5–10 inches below average. For example, the Wooster area is down 10–20 inches, and northeast of Cleveland is 20–40 inches below average, Wilson said.

Across the Midwest, this spring is expected to be warmer—mostly in May and June—and wetter than average, Wilson said. How wet? It’s unclear. However, rainfall this spring could hamper planting again, he said.

“Just because it happens one year does not mean it’s going to happen the same the following year,” Wilson said, referring to last spring’s record rainfall in Ohio, which delayed and prevented planting and led to significant drops in corn and soybean yields.

“Given the trends we’re seeing, the probability of overall wetter conditions this spring is great, so we need to be prepared.”

Warmer weather causes more evaporation to occur, which puts more water into the atmosphere. That water vapor eventually falls as rain.

Despite the increased precipitation, Ohio still suffers periods of drought as well. September 2019 marked the hottest September on record in Ohio. “So all of a sudden, we were dealing with some drought conditions,” Wilson said.

By October 2019, 80% of the state was severely dry, and 30% was in moderate drought conditions, he said.
A lot of farmers didn’t catch it in their fields, and I probably wouldn’t have seen it had Sam not told me.

AARON OVERHOLSER
Co-owner, Overholser Farms, Bradford, Ohio

Educator helps save farm a bundle

Through the advice he gave a farm’s owners in Darke County, an OSU Extension educator saved the farm nearly $44,000 a year, on average, over the last three years.

Sam Custer, an Extension educator, was doing research on a corn field at Overholser Farms in Bradford, Ohio, when he saw brown spots covering the leaves of many soybean plants in a field on the farm.

The spots were signs of frogeye leaf spot. The fungal disease was widespread enough that the field needed to be sprayed with a fungicide to limit the damage to the crop, Custer advised the farm’s owners, Aaron and Sterling Overholser.

“A lot of farmers didn’t catch it in their fields, and I probably wouldn’t have seen it had Sam not told me,” Aaron Overholser said.

The Overholsers treated some of their fields with a fungicide but left other fields untreated to see how much of an impact the fungal disease would have. The results surprised them. The treated fields yielded 6.2 bushels per acre more in soybeans, on average, than the untreated fields, which translated to about $50,000 that they would have lost had they not treated for frogeye leaf spot in 2018.

A year later, Custer again helped the farm save money. It was early June 2019, and Aaron Overholser had not been able to get into some fields to plant soybeans because of persistent rain.

“We were trying to make a decision: risk planting late or take prevented plant insurance, which we had never done before,” Overholser said.

Custer and the Overholsers’ crop adviser recommended that option rather than risk low yields from planting late in some fields.

Custer then helped the Overholsers choose cover crops to grow on those fields so they would not be bare, which would still allow the family to receive Market Facilitation Program payments on the field.

That advice saved the farm $30,000, Overholser said.

This year, Overholser said Custer’s advice on a farm subsidy program could earn the farm an additional $37 on each of its 1,400 acres, for a total of $51,800.

Custer said that working as an Extension educator has added purpose to his life, giving him an opportunity to apply what he knows to help farmers increase their profits.

“It helps to receive the acknowledgement that what I am doing is adding value to someone’s life,” he said.

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They want healthy food items that don’t contain chemical additives or preservatives, and they want ingredients they can pronounce.

A CFAES research team is seeking to remedy those issues.

Funded by a four-year, $891,000 grant from the U.S. Department of Agriculture’s National Institute of Food and Agriculture, the team has developed an innovative manufacturing technology that will preserve food and beverages using wholesome, recognizable ingredients, no artificial preservatives, and reduced use of heat, all thanks to a type of high-pressure-based shear technology.

Called Ultra-Shear Technology (UST), this new method allows food companies to manufacture healthier beverages, sauces, condiments, and other foods by reducing thermal exposure through the combined application of elevated pressure, shear, and controlled times and temperatures, said V.M. “Bala” Balasubramaniam, a CFAES professor of food engineering who is leading the research.

His team investigates innovative food technologies and then works with industry to implement those technologies.

“Health-conscious consumers pay close attention to ingredients in beverages and tend to avoid products perceived to contain artificial or chemical-sounding ingredients, although such ingredients may be scientifically proven to be safe and functional,” Balasubramaniam said.

With a projected global population of 9.1 billion people by 2050, meeting the growing demand for beverages and other foods with substantiated health benefits and consumer-desired quality attributes is a major challenge, he said.

“Our ongoing research has found that high-pressure processing is a versatile technology and can be used beyond food safety,” Balasubramaniam said. “For example, high pressure can be used to preserve foods with extended shelf life without or minimal use of synthetic preservatives.”

“This helps food processors to remove synthetic ingredients,” he said.

Known internationally for his research on high-pressure and other types of nonthermal processing, or safely processing food using significantly less heat, Balasubramaniam and his team are working with scientists and engineers at Pressure BioSciences, Inc., a Massachusetts-based company that manufactures high-pressure-based equipment and laboratory instrumentation for the life-science industry.

The UST equipment developed as a result of the research project will be used to demonstrate the technology to the beverage and food processing industry through pilot plant demonstrations and testing, Balasubramaniam said. UST will also be shared with food processors through webinars, short courses, and food processor fact sheets.

“The UST technology is expected to be particularly beneficial for medium- and small-scale food processors and entrepreneurs who otherwise have limited technical resources to evaluate such novel food manufacturing processes,” he said. “The ultimate goal is for consumers to benefit from the increased availability of wholesome, healthy beverage and food options.”
New website helps farmers increase profit margins

Farmers can access a new CFAES website to help them make financial decisions that could increase their profit margins: go.osu.edu/farmbillprograms.

Available at the site? Answers to FAQs about the Agricultural Risk Coverage and Price Loss Coverage, a video-recorded talk on the Dairy Margin Coverage Program, and a series of farm management webinars that discusses topics from prevented planting insurance to reducing risks associated with declines in commodity prices or production.

Be cautious about growing hemp

Anyone interested in growing hemp should proceed with caution, CFAES experts warn.

The cost of planting and harvesting hemp is high, ranging from $10,000 to $15,000 per acre, and the profit levels are uncertain, said Brad Bergefurd, CFAES horticulture specialist. Bergefurd was one of several speakers at the CFAES-sponsored “Growing Hemp in Ohio” conference in January in Wooster.

Even growing hemp to be turned into CBD oil, which has historically been the most profitable use of hemp, has run into some trouble recently. An oversupply of CBD has led to a significant price drop, Bergefurd said.

For tips on growing hemp, visit go.osu.edu/hemptips. For tips on protecting your hemp investment, visit go.osu.edu/growinghemp.

Manage weeds, manage losses

Weeds cause over $8 billion in U.S. crop losses annually, says the introduction to the 2020 Ohio, Indiana, and Illinois Weed Control Guide, which aims to help keep people from seeing any part of those losses.

Written by CFAES, Purdue Extension, and Illinois Extension researchers, the updated, 220-page bulletin provides science-based suggestions for managing weeds in corn, soybeans, small grains, and forages—plus hayfields, grass pastures, and Conservation Reserve Program lands.

Learn more about the guide and buy it—the price is $15.25 plus shipping, or $12.25 for a downloadable PDF—from OSU Extension Publications at go.osu.edu/2020weedcontrol.

Connecting science to fields: eFields

CFAES’ eFields program has published its 2019 findings, which come from 88 on-farm trials in 30 Ohio counties. The report, its webpage says, can “help farmers and their advisers understand how new practices and techniques can improve farm efficiency and profitability.”

Scientists with the eFields program are doing field-scale research on subjects including precision nutrient management, agricultural technologies, production budgets, and cover crops.

Read or download an electronic version of the report at go.osu.edu/efields. For a printed copy, contact your county OSU Extension office or send an email to digitalag@osu.edu.

CFAES IMPACT is produced by The Ohio State University College of Food, Agricultural, and Environmental Sciences. If you have a story idea, comment, or question, please send it to Amanda Lukacsko at lukacsko.6@osu.edu or 364 W. Lane Ave., Suite B120, Columbus, OH 43201. This publication is distributed through the Ohio Farm Bureau Federation’s Buckeye Farm News and Our Ohio.

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