Imagine a field crop that grows for many years, not just one year.

A crop that yields grain for making bread, cookies, and other foods for people, including, say, a beer called Long Root Ale.

A crop that serves double duty by also yielding abundant, high-quality forage for livestock.

A crop whose massive, sod-forming root system grows as deep as a person is tall, great for grabbing nutrients and water, a boon to soil health and water quality.

CFAES’ Steve Culman is helping study that crop. Called Kernza perennial grain, it’s a trademarked type of intermediate wheatgrass. The Salina, Kansas-based Land Institute developed it.

‘It’s really uncharted territory’

Culman, a soil fertility specialist in the CFAES School of Environment and Natural Resources, is leading a multistate pilot study evaluating Kernza’s potential as a sustainable, dual-use crop, including in Ohio.

Ten scientists and 11 sites in the United States and Canada are involved in the work, with CFAES managing two of the sites in Wooster and in South Charleston at the Western Agricultural Research Station.

“It’s an exciting group to be a part of because it’s really uncharted territory,” Culman said.

Ohio’s big three grain crops—soybeans, corn, and wheat—are grown as annual crops, of course. But growing perennial Kernza is a whole other ballgame. “It’s almost like we’re managing a hayfield for grain,” Culman said.

Yields both grain and forage

Kernza has another difference: It yields a lot less grain than annual wheat does—for now, about 15 bushels per acre in Culman’s project compared to 70–80 bushels. So, getting good livestock forage from it, too, is key to making it worth growing.

“You need an animal in the system to make it work economically,” Culman said.

The study has evaluated, among other things, the impact of haying on Kernza’s grain yield and forage quality. When and how often should you hay it? The team is writing up the results now.

Story continues on next page
Future research, pending the securing of funding, will dig into questions such as Kernza’s nitrogen needs and environmental benefits, including possible big reductions in nitrate leaching into water compared to that of annual grains.

Also ahead, it is hoped, will be on-farm trials with growers. If interested, contact Culman at culman.2@osu.edu.

**Demand exceeding supply**

For now, U.S. farmers grow only about 400 acres of Kernza perennial grain, Culman said. But companies such as General Mills and Patagonia Provisions, a partner in brewing the aforementioned Long Root Ale, are exploring new ways to use it.

“Right now, the demand is far in excess of the supply,” Culman said.

**Comes down to roots**

The Kernza plant’s best feature, it seems, is out of sight. Its deep, dense roots “fundamentally change” the energy and nutrient cycling that go on below the ground, Culman said. Its roots grow twice as deep and are far denser than those of annual wheat, according to the Land Institute. And they keep growing from year to year. They’re not churned up by tilling.

The benefits, among many, include better soil structure, greater fertility, and more efficient water use.

Learn more at go.osu.edu/perennialgrain and go.osu.edu/ASA (click the arrow to view Culman’s presentation).

Dicamba products, which include XtendiMax, Engenia, and FeXapan, are typically applied to eliminate weeds in fields of crops—such as some varieties of soybeans—that are genetically modified to withstand dicamba. The herbicide can kill broadleaf weeds, as opposed to grasses, and can harm or kill any crop that’s not genetically modified to tolerate it.

The product can easily turn into a vapor and spread to plants it was not intended to reach.

“You can do everything right on the day you apply it. Then, later that day or the next morning, it can still move,” said Mark Loux, an OSU Extension weed specialist.

The best time to apply dicamba is in early spring when there’s less potential to harm other plants, Loux said. “You have a pretty narrow window to get this done,” he said.

For more information about using dicamba, visit u.osu.edu/osuweeds.

Dicamba-specific training dates and locations can be found on Extension’s Pesticide Safety Education Program website at pested.osu.edu.
Driven by plans to modernize her family farm, Emily Mullen is gaining the requisite knowledge through a scholarship to Ohio State ATI.

"Having been here a semester, I can say that the largest mistake of my life would have been not going to college," said Emily, a recipient of the Catalpadale Bristol Dairy Scholarship. Every Friday, after a week of classes, Emily drives four hours from ATI in Wooster to her family’s dairy farm in the southwestern Ohio town of Okeana.

Saturdays, Emily wakes up at 2:30 a.m. to start the morning milking. She finishes the evening milking at 7:30 p.m.

"Then, I get up and do it all over again the next morning," she said. "I will milk Sunday night, get back to Wooster before midnight, and get up and go to my 8 a.m. class."

The dairy includes 350 cows, 100 of which are lactating.

A freshman majoring in dairy production and management at ATI, Emily said she has learned a lot from her classes already. She currently is taking a dairy health class taught by a practicing veterinarian. Last semester, in a milking and reproduction class, she earned her breeder certifications from COBA Select Sires.

"That’s what I really love about ATI. When you want hands-on experience—I am a person who really loves that—this is the place."

After she finishes her associate degree, Emily plans to apply her knowledge by opening the dairy to visitors, adding a creamery, and putting an agritourism twist on the traditional family farm.

In 2016, Lois H. and John W. Douglass established the Catalpadale Bristol Dairy Scholarship (#315439) at CFAES to help ATI students who want to make a difference in production agriculture and work on a dairy farm after graduation. “We believe it still has meaning in this country,” John Douglass said.

Without the scholarship, Emily said the debt would have kept her from going to college.

“It amazes me that people who don’t truly know me as an individual picked me out of all the other applicants, and they are not aware about what they have done—the doors they have opened up for me, my professors, the friends I have made," she said. "I never would have had this networking opportunity. It truly takes me back. That’s truly selfless."

For more information, contact the CFAES Office of Advancement at 614-292-0473.
**Fertilizer certification classes**

Farmers who need to become certified or recertified in fertilizer application can sign up for one of the many courses taught by OSU Extension across the state. The Ohio Department of Agriculture provides the certification.

For more information about certification courses, visit [nutrienteducation.osu.edu/trainingopportunities](http://nutrienteducation.osu.edu/trainingopportunities). For more information about recertification courses, visit [nutrienteducation.osu.edu/fertilizerrecertification](http://nutrienteducation.osu.edu/fertilizerrecertification).

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**Ask an expert**

Got questions regarding your life, family, garden, business, or community? Members of OSU Extension’s faculty and staff as well as its Master Gardener Volunteer program are available to answer those and other questions through the online eXtension Ask an Expert program. Questions can be posted online at [extension.osu.edu/ask-an-expert](http://extension.osu.edu/ask-an-expert) directly to Extension personnel or Master Gardener Volunteers who will respond via email. Your questions can be as detailed as you like and can include uploaded images. This service is free and open to all.

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**Baa, baa sheep blog**

The Ohio State University Sheep Team blog at [u.osu.edu/sheep](http://u.osu.edu/sheep) offers easily digestible doses of research findings on raising sheep, keeping them safe and healthy, and keeping the sheep business profitable. After a six-year run ending in 2014, the sheep blog was relaunched in August 2017.

Brady Campbell, sheep team program coordinator with CFAES, manages the site and includes contributions from the more than 25 Ohio State faculty and staff interested in sustaining Ohio’s sheep industry.

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**Prep for the growing season**

The [Ohio Agronomy Guide](http://estore.osu-extension.org) updated in 2017, comprises recommendations from research and educational programs. Included is information on Ohio’s climate and soil; soil and water management; soil fertility; and corn, small grain, and forage crop production and management. Seed evaluation and weed control for those same crops are also discussed. Included are three new chapters: “Considerations for Using Cover Crops,” “Conducting On-Farm Research,” and “Precision Agriculture.” To order, go to [estore.osu-extension.org](http://estore.osu-extension.org) and search for Ohio Agronomy Guide.