

# **THE FARMER'S REPORT**



**The Mendota Reporter**

**The Amboy News**

**March 31, 2021**

## Going back in time restores decades of quiet corn drama

**URBANA** – Corn didn't start out as the powerhouse crop it is today. No, for most of the thousands of years it was undergoing domestication and improvement, corn grew humbly within the limits of what the environment and smallholder farmers could provide.

For its fertilizer needs, early corn made friends with nitrogen-fixing soil microbes by leaking an enticing sugary cocktail from its roots. The genetic recipe for this cocktail was handed down from parent to offspring to ensure just the right microbes came out to play.

But then the Green Revolution changed everything. Breeding tools improved dramatically, leading to faster-growing, higher-yielding hybrids than the world had ever seen. And synthetic fertilizer application became de rigeur.

That's the moment corn left its old microbe friends behind, according to new research from the University of Illinois. And it hasn't gone back.

"Increasing selection for aboveground traits, in a soil setting where we removed all reliance on microbial functions, degrad-



Photo by ACES Alonso Favela

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ed microbial sustainability traits. In other words, over the course of half a century, corn breeding altered its microbiome in unsustainable ways," says Angela Kent, professor in the Department of Natural Resources and Environmental Sciences at the University of Illinois and co-author of a new study in the International Society of Microbial Ecology Journal.

Kent, along with co-authors Alonso Favela and Martin Bohn, found modern corn varieties recruit fewer "good" microbes – the ones that fix nitrogen in the soil and make it available for crops to take up – than earlier varieties. Instead, throughout the last several decades of crop improvement, corn has been increasingly recruiting "bad" microbes. These are the ones that help synthetic nitrogen fertilizers and other sources of nitrogen escape the soil, either as potent greenhouse gases or in water-soluble forms that eventually end up in the Gulf of Mexico and contribute to oxygen-starved "dead zones."

"When I was first analyzing our results, I got a little disheartened," says Favela, a doctoral student in the Program in Ecology, Evolution, and Conservation Biology at Illinois and first author on the study. "I was kind of sad we had such a huge effect on this plant and the whole ecosystem, and we had no idea we were even doing it. We disrupted the very root of the plant."

To figure out how the corn microbiome has changed, Favela recreated the history of corn breeding from 1949 to 1986 by planting a chronological sequence of 20 off-patent maize lines in a greenhouse.

"We have access to expired patent-protected lines that were created during different

time periods and environmental conditions. We used that understanding to travel back in time and look at how the associated microbiome was changing chronologically," he says.

As a source of microbes, Favela inoculated the pots with soil from a local ag field that hadn't been planted with corn or soybeans for at least two years. Once the plants were 36 days old, he sequenced the microbial DNA he collected from soil adhering to the roots.

"We characterized the microbiome and microbial functional genes related to transformations that occur in the nitrogen cycle: nitrogen fixation, nitrification, and denitrification," he says. "We found more recently developed maize lines recruited fewer microbial groups capable of sustainable nitrogen provisioning and more microbes that contribute to nitrogen losses."

Kent says breeding focused on aboveground traits, especially in a soil context flooded with synthetic nitrogen fertilizers, may have tweaked the sugary cocktail roots exude to attract microbes.

"Through that time period, breeders weren't selecting for maintenance of microbial functions like nitrogen fixation and nitrogen mineralization because we had replaced all those functions with agronomic management. As we started selecting for aboveground features like yield and other traits, we were inadvertently selecting against microbial sustainability and even actively selecting for unsustainable microbiome features such as nitrification and denitrification," she says.

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## Illinois pesticide applicator training, testing available 24/7 online

**URBANA** – University of Illinois Extension's Pesticide Safety Education Program (PSEP) has collaborated with the Illinois Department of Agriculture to offer online training courses and online certification exams to Illinois Pesticide applicators and operators. All training courses and exams are available now through at least July 2021.

"Our commercial training courses each provide several hours of instructional content mixed with exam-prep questions," says Matt Gill, Illinois Extension specialist. All courses are entirely self-paced and can be completed over a 30-day window following purchase. Some even include the opportunity for obtaining continuing education credits.

Feedback on the new online courses has been overwhelmingly positive. "Folks seem to particularly appreciate the ability to review content more than once, allowing them to strengthen any knowledge areas they may be struggling with," says Maria Turner, Illinois Extension specialist. For a full list of available courses and pricing see the PSEP Training and Testing page.

For those who prefer or require an alternative to online

training, PSEP continues to offer fill-in-the-blank style workbooks for most categories of licensure which guide self-study alongside the printed manuals. For availability and ordering instructions, see the PSEP Study Materials page.

When folks are ready to take their pesticide applicator or operator licensure exams, they now have the option to do so online or in-person. Over 6,000 exams have already been administered online this year, and roughly half that many have been administered in-person. The online exams utilize a commercial proctoring service which requires test takers pay a \$12 fee per exam attempt for the service. For detailed instructions for scheduling an online exam, start at the PSEP Training and Testing page. Since taking an online exam will be a new experience for many, Illinois Extension Specialist Travis Cleveland's article *What to Expect When Taking Your Illinois Pesticide Certification Exam Online* may prove helpful for many.

In-person testing sessions are available, according to the IDA In-Person Testing website. Registration is required, and space is limited. More in-person testing sessions will

be added as conditions and state/local policy permits.

"Of the many folks our team has spoken with so far this year, the common message after taking their exam is that they were grateful for the online training courses and felt they were very helpful in preparing for the exam," says Turner.

The PSEP training courses and exams are hosted at Learn @ Illinois Extension, a new site developed by Illinois Extension. "Great credit goes to the extension web development team," says Gill. "They made it possible for our program to keep our commitment to providing quality training to folks seeking pesticide application licensure, despite the challenges the pandemic has presented."

## CORN

Now that it's clear something has changed, can breeders bring good microbes back in corn hybrids of the future?

Bohn, corn breeder and associate professor in the Department of Crop Sciences at Illinois, thinks it's very possible to "rewild" the corn microbiome. For him, the answer lies in teosinte, a wild grass most people would have to squint pretty hard at to imagine as the parent of modern corn.

Like wild things everywhere, teosinte evolved in the rich context of an entire ecosystem, forming close relationships with other organisms, including soil microbes that made soil nutrients easier for the plant to access. Bohn thinks it should be possible to find teosinte genes responsible for creating the root cocktail that attracts nitrogen-fixing microbes. Then, it's just a matter of introducing those genes into novel corn hybrids.

"I never thought we would go back to teosinte because it's so far removed from what we want in our current agricultural landscape. But it may hold the key not only for encouraging these microbial associations; it also may help corn withstand climate change and other stresses," Bohn says. "We actually need to go back to teosinte and start investigating what we left behind so we can bring back these important functions."

Bringing back the ability for corn to recruit its own

nitrogen fixation system would allow producers to apply less nitrogen fertilizer, leading to less nitrogen loss from the system overall.

"Farmers don't always know how much nitrogen they will need, so, historically, they've dumped as much as possible onto the fields. If we bring these characteristics back into corn, it might be easier for them to start rethinking the way they manage nitrogen," Bohn says.

Kent adds that a little change could go a long way.

"If we could reduce nitrogen losses by even 10% across the growing region of the Midwest, that would have huge consequences for the environmental conditions in the Gulf of Mexico," she says.

The article, "Maize germplasm chronosequence shows crop breeding history impacts recruitment of the rhizosphere microbiome," is published in the *International Journal of Microbial Ecology Journal* [<https://doi.org/10.1038/s41396-021-00923-z>].

The Department of Natural Resources and Environmental Sciences and the Department of Crop Sciences are in the College of Agricultural, Consumer and Environmental Sciences at the University of Illinois.

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## Youth leaders ready to meet ag challenges today and tomorrow

**URBANA** — High school students developed the skills and knowledge needed to face challenges in agriculture both as teen leaders today and as future careers tomorrow at the recent National 4H Youth Summit on Agri-Science. Students worked with each other and experts in the agricultural community, in a collaborative, hands-on educational setting, with teen teachers playing a large role in the summit.

Teens gained knowledge on topics including food science, environmental science,

ag literacy and advocacy, ag production, and ag technology as well as how to use this knowledge to become changemakers in their community.

“I think that we got to see the best and the brightest of 4-H, but what I’m always impressed with is how the students want to use their knowledge to become changemakers,” says Megan Dailey, director of Metropolitan Food & Environmental Systems and summit career panelist. “We can absolutely trust the youth with our future.”

A focus of this year’s Summit was increasing awareness of available career opportunities and pathways in agriculture. “I thought it was really beneficial that so much of the information was career focused,” says Donna Nuger, University of Illinois Extension educator in 4-H Youth Development. “Speakers were frank about how they got started and the path they took. That focus was something that you can’t usually get from a traditional conference speaker.”

The career panel format also provided value to the

panelists. “When you hear the questions they asked about educational and career opportunities they are so great,” says Dailey. “4-H youth in particular, if we follow what they want out of the world, we will be just fine.”

Despite the virtual format, teens were able to connect and network as well as gain knowledge and skills. “They used the chat to network with kids around the country,” Nuger says. “Those chances to connect even virtually did make a difference.”

The National 4-H Youth Summit on Agri-Science

is part of the 4-H National Youth Summit Series, a series of nationwide conferences that bring together high school students for hands-on activities and workshops, led by leaders and educators in these fields.

About Illinois 4-H: Illinois 4-H is the flagship youth development program of University of Illinois Extension and administered through the College of Agriculture, Consumer, and Environmental Sciences. 4-H grows true leaders, youth who are empowered for life today and prepared for a ca-

reer tomorrow. The hands-on approach in 4-H gives young people guidance, tools and encouragement, and then puts them in the driver’s seat to make great things happen. Independent research confirms the unparalleled impact of the 4-H experience, demonstrating that young people are four times more likely to contribute to their communities; two times more likely to make healthier choices; two times more likely to be civically active; and two times more likely to participate in STEM programs.

## Illinois Regenerative Agriculture Initiative to outline proposals at April 9 meeting

**URBANA** — Regenerative agriculture is a multi-faceted approach to rebuilding the health and vitality of earth’s soil, water,

biodiversity, and climate. The new Illinois Regenerative Agriculture Initiative (IRAI) is home for regenerative agriculture research,

education, and outreach at University of Illinois Urbana-Champaign.

Launched in October, IRAI, with support from Fresh Taste, will gather stakeholders on campus to create agriculture and food systems resilient to climate change, improve soil and water quality, support healthy communities, and enhance food security.

The group is hosting its second public meeting at 3:30 p.m. CT April 9, and interested farmers, researchers, and nonprofit groups with a stake in resilient agriculture and food production are encouraged to attend.

A major part of the initiative is facilitating ongoing conversations with key actors in the

food system network: producers, landowners, end users, scientists, nongovernmental organizations, technology firms, policy makers, the financial sector, and experts in related disciplines.

IRAI will release detail on its first request for proposals at the April meeting and network for shared understanding and team development as the project takes its next steps.

IRAI is a partnership between U of I Department of Crop Sciences; College of Agricultural, Consumer and Environmental Sciences; Extension, and the Institute for Sustainability, Energy, and Environment.

## Avoid, adapt, alter, accept: Stress management tools help farm families

**URBANA** — The only certainty during spring planting is uncertainty. Farmers face many challenges: too much rain, too little rain, long hours, crop diseases and pests, machinery breakdowns.

Josie Rudolphi, University of Illinois Extension specialist, says that most farm injuries occur during the spring and the fall when stress and fatigue increase risks for farmers. Stress and mental health conditions add to the risk factors for agricultural injury. Though faced with multiple challenges, farm operators are unlikely to seek help for mental health issues.

“Managing stress is an important component to injury prevention, health, and safety,”

says Rudolphi. The U of I assistant professor will discuss the signs and symptoms of stress and offer methods to cope with the season’s stressors during a free webinar.

“By using the Four A Method of avoid, adapt, alter, and accept, farmers can successfully manage the stress of long hours and unpredictability this planting season,” says Rudolphi.

The free online webinar begins at noon April 1. Register online. If you will need an accommodation in order to participate, please email Rudolphi. Early requests are strongly encouraged to allow sufficient time to meet your access needs.

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## ACES alums and IBRL blend their skills to make heirloom corn whiskey

**URBANA** — For Will, Clayton, and Dallas Glazik, making spirits from Illinois-grown heirloom corn is a labor of love. The brothers own and operate Silver Tree Beer & Spirits from their fifth-generation family farm in Paxton.

“We grew up on a certified organic farm, and we wanted to get back into farming and figure out a way that we could bring something of value to the farm,” says Will Glazik, the oldest brother and Silver Tree director of sales.

“We were looking into different options, and ultimately settled on spirits because the grains for vodka and whiskey are grown in Illinois. When you think about rye, corn and wheat, those crops grow right here,” he adds.

Whiskey needs to age in barrels for four to five years so it’s important to start with the right foundation. That’s why the brothers turned to the Integrated Bioprocessing Research Laboratory (IBRL) in the College of Agricultural, Consumer and Environmental Sciences (ACES) at the University of Illinois for help. IBRL was a natural fit for the brothers, who all are ACES alums.

Silver Tree Spirits is working with IBRL – which is eager to welcome back more student workers when the time is right – to distill whiskey from heirloom corn varieties and analyze flavor and other characteristics.

“No. 2 yellow dent is by far the most common corn. But there are lots of other really interesting varieties. Some have different colors like red, white, blue, orange, and green, or a mix of colors. We’re hoping they also carry interesting and unique flavors,” Glazik says. “There’s increasing interest

in the craft distilling industry around the different flavors you can get from different varieties of corn.”

The Glaziks connected with IBRL through the Artisan Grain Collaborative (AGC), an organization devoted to assist small businesses working within the food grade grain supply chain in the Upper Midwest. AGC frequently partners with IBRL and the Food Science and Human Nutrition Pilot Processing Plant at U of I on various projects, and IBRL manager Brian Jacobson is chair of AGC’s Research & Variety Testing Working Group.

Alyssa Hartman, AGC executive director, says the organization helped Silver Tree Spirits obtain a North Central Region Sustainable Agriculture Research and Education (SARE) grant for their project.

“We helped put together a proposal for this grant to distill five different varieties of heritage and open-pollinated corn, as well as common yellow dent corn as a control,” she says. “IBRL will run the distillation and perform chemical analysis. They will also measure the conversion yield, testing if you get more alcohol out of some varieties than others.”

Phil Manning, pilot plant specialist at IBRL, explains, “We’re going to be making white whiskey using heirloom legacy corn varieties. Our role is to produce the distilled spirits and look at what flavors work best. We aim to control the processing as carefully as we can, using similar grinding, conversion, fermentation methods, and yeast.”

Manning and Jacobson have considerable experience in distillation and fermentation, primarily with alternative fuels, chemical

components, protein, and amino acids, but also with alcoholic beverages.

Glazik says the cooperation with IBRL staff is very productive. “We’re really excited about this, and they are phenomenal to work with,” he says. “They’re meticulous and that’s been good for developing protocols of how to run this experiment. They’ve been very helpful on the analytical side.”

IBRL obtained a new state-of-the-art still to process the whiskey, and the staff are learning to run the equipment as a craft distiller would, Glazik says.

They also enlisted the help of Keith Cadwallader, professor of food chemistry in the Department of Food Science and Human Nutrition in ACES, and an expert in characteristics and flavor of distilled spirits.

“We can do a sensory guided instrumental analysis to identify flavor-active components. We can objectively measure things you can smell and taste,” Cadwallader says. “So if someone wants to know if the distillation process is achieving the goal they want – for example, ensuring they will recover certain flavor compounds in the final spirit – we can help with that. We can measure aroma compounds that are either positive or detrimental to the flavor.”

Because lab analytics alone cannot capture the full experience of whiskey flavor, the project will also include a panel of trained whiskey specialists who will taste and characterize the different whiskeys, as well as an untrained tasting panel representing average consumers.

The Glaziks have put their ACES degrees to good



Dallas (left) and Clayton Glazik monitor whiskey distillation at the Integrated Bioprocessing Research Laboratory (IBRL).

Photo submitted

use in their business. Will holds a bachelor’s degree from Crop Sciences, which has helped him obtain the expertise to grow heirloom corn. Dallas, the company’s CEO, obtained a bachelor’s degree from the Department of Natural Resources and Environmental Sciences (NRES), and has focused on creating natural habitats around the farm. Clayton was an agricultural communications major, and he now manages advertising and marketing for Silver

Tree Spirits.

The brothers are dedicated to their homegrown business and strive to keep all production local. Even their barrels are made locally from trees grown in Illinois and processed at the Glaziks’ sawmill.

“We take a lot of pride in being a part of every step of the process from planting the seed, tending it through the year, harvest, storage in the bin, distilling it into alcohol, and then selling that direct to the consumer,”

Will explains. Their products are available in grocery stores, liquor stores, bars, and restaurants throughout Central Illinois.

“Sometimes raising corn and soybean conventionally can get mundane. This is a way we can bring a new life, a new spark into row crop production,” he adds.

AGC’s Hartman adds this project fits well with the collaborative’s goal of increasing farm viability and rural economic development.

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## Could super-charged cattle embryos solve world food challenges?

**URBANA** – What if, in the next five to 10 years, we could double or triple milk and meat availability in developing countries without converting more land to cattle production? Millions of hunger-related deaths and nutritional deficiencies could be prevented, giving farmers and families a real shot at prosperity.

It's not a pipe dream. Researchers leading the University of Illinois-Chessie Creek Farm Tropical-Adapted Cattle Project have successfully bred animals that thrive in hot climates and produce 10 times the milk of indigenous breeds.

Getting to this point took some luck, a great deal of effort, and a multi-million dollar investment, but the plan is to simply give elite tropical-adapted embryos away to developing countries. It's all part of a commitment by the College of Agricultural, Consumer and Environmental Sciences (ACES) at Illinois to help feed the world by 2050.

"In many parts of the world, owning cattle means progressing out of poverty. The more cattle people have, the greater their wealth. But more cattle can impact wildlife populations, which can be important for the environment and

tourism. So we thought, let's provide the milk production of 10 cows in one," says Matthew Wheeler, project leader and professor in the Department of Animal Sciences, part of the College of ACES.

In November 2020, Wheeler's team witnessed the birth of the first U.S.-bred Girolando heifer and purebred Brazilian Gyr bull calves at Chessie Creek Farms in Walterboro, South Carolina. About 100 more Girolando calves are due in September.

Gyr cattle, with their humps, recurved horns, and drooping ears, are indigenous to tropical locales around the world. Unlike Holsteins, the most common and highest-producing dairy breed in the world, Gyrs don't mind the heat, but they only produce about 15% of what Holsteins deliver in each lactation.

Girolandos bring the best of the two breeds together. Wheeler's team breeds them by repeatedly mating Holstein and Gyr parents (and intermediate hybrids), resulting in animals that are five-eighths Holstein and three-eighths Gyr. Wheeler says his first Girolando heifer will be producing milk in 2022, and he expects yields at least 10 times that of Gyrs in their native range.

Girolandos are common in Brazil, but because of endemic disease issues, they can't be exported to other countries.

"If you're going to distribute them to the rest of the world, somebody had to breed them in a country that's high health status. Why not us?" Wheeler says. "At Illinois, we're good at dairy. Somebody's got to be the national expert in tropical dairy. Why not be audacious?"

Kim Kidwell, dean of the College of ACES, adds, "This project is an incredible example of how ACES research changes lives and captures the essence of what we do and why it matters. Matt and his team have shown great technical expertise, tenacity and heart in making high-yielding, tropical-adapted cattle a reality. I am extremely proud of their commitment to making a difference in the world by enhancing food security for people in need through amazing

science."

Realizing the potential of Girolandos for the developing world, Wheeler connected with the owner of Chessie Creek Farm, who shares Wheeler's passion for improving lives through science.

The owner, who prefers to remain anonymous, says, "This has been an exciting and great learning experience for all involved. In the near future, we sincerely hope we will be providing high quality, low maintenance animals for developing countries. We envision that our farm will ultimately be able to produce vast quantities of embryos from these animals to feed hungry people around the world."

In addition to building up the herd in South Carolina, Wheeler is in discussions with governments, universities, and NGOs in Latin America, Africa, and Asia to plan distribution of embryos in the next year or two.

Importantly, the team will continue to support operations on the ground after embryos are delivered, providing the know-how to transfer the embryos into indigenous cattle and follow-on expertise through calving and lactation. They'll also assist with nutrition, animal management, future breeding, and genetic selection to ensure the long-term health and sustainability of the herds.

Wheeler says now that his team has worked out the process to develop Girolandos on U.S. soil, it should be fairly straightforward to improve other traits, such as muscle mass and marbling, for beef production in tropical hybrids. And in the future, with continued support, the project could expand to other animal production systems, including swine, sheep, and goats.

"The data resulting from the project, its analysis, and results will inform future decision-making not only for the project but the direction of food production for 'Feed the Future' initiatives to come in those developing countries," Wheeler says. "Ultimately, we're confident this work will result in greater food and income security where it's needed most."

## Grain bin safety event is March 29 to April 2

**URBANA**—Each year, more than 20 agricultural workers in the U.S. die in grain bin accidents, and the number of fatalities is increasing. Stand Up 4 Grain Safety Week is an annual event that promotes awareness, education, and training on grain bin safety.

This year, Stand Up 4 Grain Safety Week takes place online March 29 through April 2. Daily sessions from 10 a.m. to 12 p.m. CDT include video presentations, supplementary materials, and other resources.

The agenda covers the following issues:

Monday: Kick-off event featuring safety training, tips and demonstrations

Tuesday: Near-miss reporting

Wednesday: Impact of grain quality on safety

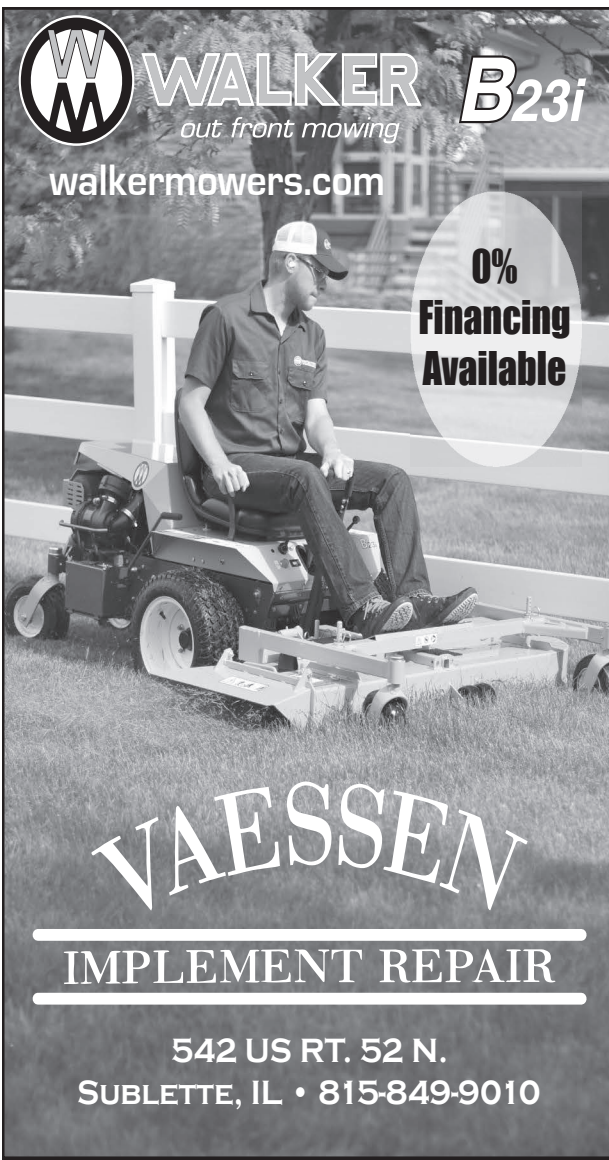
Thursday: Grain bin safety, including how to enter a grain bin in adverse weather conditions

Friday: Emergency action plans

The topics are relevant for farmers and ag business professionals, or anyone who works with grain handling, says Salah Issa, assistant professor in the Department of Agricultural and Biological Engineering (ABE) at University of Illinois, and one of the events' organizers. Other speakers from the U of I include Kent Rausch, associate professor in ABE, and Daniel Gaither, Director of Safety, College of Agricultural, Consumer and Environmental Sciences (ACES).

Participation is free, but you must register to attend. Sign up online for one or more sessions.

The event is hosted by the Grain Handling Safety Coalition, a team of industry organizations, agencies and individuals dedicated to preventing accidents and injury in grain handling, in cooperation with the Alliance, a program under the U.S. Occupational Safety and Health Administration (OSHA). Sponsors include the University of Illinois and other organizations.



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## University of Illinois precision agriculture program to debut summer 2021

**URBANA** – Feeding a growing global population is one of the most urgent challenges of our time. Farmers and scientists are advancing innovative solutions on many fronts, from breeding to production management to precision agriculture, with technology as a common thread.

More than ever, future leaders in agriculture need a strong foundation in data science, programming, and digital applications. The College of Agricultural, Consumer and Environmental Sciences at the University of Illinois has been providing that training for years, but now, with more than \$195,000 in funding from the CHS Foundation, high school students, particularly students from racial and

ethnic minority groups, can get an early start on careers in precision agriculture. CHS Foundation is funded by gifts from CHS Inc., the nation's leading farmer-owned cooperative.

Starting this July, high school students age 16 and up, as well as first-year students at U of I, can enroll in a free two-week summer course to learn the fundamentals of precision agriculture. Although the course will be held online this year due to COVID-19, it will include hands-on learning and will give students opportunities to work with real data to solve real problems.

“By the end of the course, students will have the basic skills for a little software development. So, we will be hosting a 24-hour ‘hack-

athon’ where they can develop innovative software solutions for a real-world crop or animal management issue,” says Isabella Condotta, agricultural engineer and assistant professor in the Department of Animal Sciences at Illinois. Condotta is leading the program along with Hamze Dokoohaki of the Department of Crop Sciences.

Funding from the CHS Foundation, which is supporting development of the summer program, a cross-disciplinary Precision Agriculture Club, and two new introductory precision agriculture classes, is aimed at increasing enrollment by creating an innovating, vibrant, and cutting-edge environment that is open and available to all students.

“The ultimate goal is training a new generation of precision agriculture leaders for sustainable crop and animal production,” says Nanci Lilja, president, CHS Foundation. “By increasing students’ exposure early in their education, we hope they pursue a career in agriculture and precision agriculture related fields.”

New classes will be offered as part of two first-of-their-kind majors offered at ACES: Computer Science + Animal Sciences and Computer Science + Crop Sciences. One of the classes, taught by Condotta, will introduce ways in which precision tools and sensors can increase efficiency and solve systemic problems in agricultural systems. Completion of the introductory

course will qualify students to enroll in Condotta’s higher-level Precision Management of Animals class.

Dokoohaki will teach an introductory course covering major issues around crop production, using statistical modeling, process-based modeling, and remote sensing to address those challenges.

“Our inspiration for developing and proposing this program was to ‘even the playing field’ for young and brilliant students, including traditionally underrepresented racial and ethnic groups, seeking opportunities in precision agriculture. We are hoping programs like this help nurture the next generation of ag leaders through equity and exposure,” Dokoohaki says.

Student members of the new Precision Agriculture Club will host speakers and fundraising events, compete in precision ag contests against rival schools, discuss relevant scholarly articles, and learn digital ag platforms.

They will also have the opportunity to serve as mentors to participants in the two-week summer course, creating a support network between older students and those just beginning their precision agriculture journey.

Interested students should apply for the summer course by April 16. Details about the course, including application forms, a schedule of topics, and more are available on the Center for Digital Agriculture website.

## Youth come together to make their mark in the livestock industry

**URBANA** — Illinois teens will gather to gain hands-on experience in the livestock field in this year’s Illinois 4-H Junior Livestock Conference on April 24 and 25. The theme of this year’s conference is “Making Your Mark,” highlighting the roles and skills that youth can take in shaping the future of the livestock industry.

“There are so many ways teens can make their mark on the livestock industry, from

learning how to identify disease by branding a steer to developing a new feed ration,” says Dan Jennings, University of Illinois Extension 4-H animal systems youth development educator. “Our goal with this conference and all of our programming is to help shape the next generation of leaders.”

Teens will participate in various “Glove-Up Sessions” throughout the conference that will allow them to work hands-on in a

variety of skills, such as milking a mechanical cow, practicing wound care on live animals, creating feed formulations, and more.

“Glove up sessions are hands-on workshops that allow youth to actually put on gloves and gain experience right there in the conference,” Jennings says. “Providing the information is great, but there’s no substitute for practicing the skill in a guided setting right there in the moment.”

Hands-on workshop sessions include poultry, egg judging and breed i.d.; mastitis testing and milking a cow; making rope halters, saddle fitting and livestock knots; livestock i.d. techniques; nutrition experiments; magna wave laser therapy; and hoof trimming, bandaging, and wound care.

Tasha Bunting, Illinois Farm Bureau associate director of commodities and livestock programs, will provide the closing keynote for the event.

All Illinois Department of Public Health COVID-19 protocols will be enforced: masks must be worn by youth, staff, and volunteers at all times; 6-foot social distancing will be encouraged; handwashing stations will be available; attendance is limited to 26 per day. Youth must indicate which day they’re attending (April 24 or April 25) when they register online.

The event cost is \$50. Those interested can sign up here. Registrations close April 12, although the conference capacity may fill up sooner.

The Illinois Farm Bureau provides financial support for this event through the Illinois 4-H Foundation.

If you need a reasonable accommodation to participate, contact Carla Blue, event coordinator, at [blue1@illinois.edu](mailto:blue1@illinois.edu). Early requests are strongly encouraged to allow sufficient time to meet your access needs.

Illinois 4-H is the flagship youth development program of University of Illinois Extension and administered through the College of Agriculture, Consumer, and Environmental Sciences. 4-H grows true leaders, youth who are empowered for life today and prepared for a career tomorrow. The hands-on approach in 4-H gives young people guidance, tools and encouragement, and then puts them in the driver’s seat to make great things happen. Independent research confirms the unparalleled impact of the 4-H experience, demonstrating that young people are four times more likely to contribute to their communities; two times more likely to make healthier choices; two times more likely to be civically active; and two times more likely to participate in STEM programs.

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