

Growing Together

> 1Q | 2020

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IN CONTROL

Start Strong and Early to Combat
Yield-Robbing Weeds



NEW
TECHNOLOGIES
BRING CORN
TRAITS TO
MARKET
FASTER

THE RIGHT FUNGICIDES
CAN HELP MANAGE
AN EXPECTED SPIKE
IN DISEASE PRESSURE

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thrive 

Even though you love your print edition of *Thrive*, please check out the magazine's website. You'll find more content and links to important resources to help you succeed in today's marketplace. The online version also makes it easy to share specific articles with others.

Scan this QR code to take the fast track to the *Thrive* website, or go to www.syngentathrive.com.



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 Photo: Jason Ryman

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 Nick Lord, a graduate student at Virginia Tech, is the master's-level winner of the 2019 Accelerating a Generation Syngenta Scholarship.
 Photo: Amy Gray of Silver Pebble Photography

We welcome your story suggestions and comments about *Thrive*.

Please send them to thrive@syngenta.com. For more information, visit the Syngenta U.S. website at www.syngenta-us.com, or call the Syngenta Customer Center at 1-866-SYNGENT(A) (796-4368).

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Thrive is produced quarterly for a nationwide agricultural audience. Its purposes are to update readers on Syngenta products, research, services and solutions, and to provide them with the information they need to succeed in today's complex marketplace.



Power of Our People

Behind every great industry stands a legion of thinkers and doers whose diverse backgrounds and talents keep the engine of innovation humming. Agriculture is no exception. From the scientist working on the next game-changing trait to the reseller determining how to best bring barren winter fields to life this spring, agriculture never rests because, in this industry, people's pursuit of excellence never ends.

At Syngenta, we understand having the right relationships in place is essential to delivering superior products and services to the farm. That's why we hire, develop and retain the best people. Our goal is to earn our customers' trust by being the most collaborative, forward-thinking team in agriculture. To achieve this goal, all of our 28,000 employees worldwide must share the same passion — to help farmers prosper.

This issue of *Thrive* explores the human resources needed to keep that passion ignited and agriculture vibrant. In one article, recruiting experts discuss tips for launching successful careers in ag, while a related infographic answers some of the most pressing questions job seekers may have.

Thrive also underscores that people's motivations for choosing professions in agriculture are as diverse as the opportunities the industry offers. For example, experiences in their urban upbringings inspired the two 2019 Syngenta scholarship recipients to pursue agricultural-related degrees. However, for the latest #RootedinAg Contest winner, her older brother and childhood memories of the family farm profoundly impacted her decision to carve out a life in agriculture.

Of course, the voices of industry veterans inject the wisdom and common sense needed to keep agriculture moving ahead. Seasoned growers and agronomists from Alabama to North Dakota tell *Thrive* how the lessons they learned in 2019 are helping them proactively build pest management programs in 2020.

As the third decade of the 21st century begins, the agricultural community is like a patchwork quilt, with its members representing unique patterns of fabric, interwoven to build a unified whole. On behalf of everyone at Syngenta, thank you for contributing to this remarkable community with your industry know-how, dedication and support. 🌱



KRISTIN SYDNOR

“At Syngenta, we understand having the right relationships in place is essential to delivering superior products and services to the farm. ... Our goal is to earn our customers' trust by being the most collaborative, forward-thinking team in agriculture.”

KRISTIN SYDNOR
Head of Human Resources in North America
Syngenta



WATCH NEW VIDEO For an in-depth interview with Kristin Sydnor, check out the new video posted to the *Thrive* website (www.syngentathrive.com).



What's in Store

Catch up on the latest products and product updates, and get performance updates for NK and Golden Harvest brand corn and soybean.

NEW PRODUCTS

Introducing Gramoxone SL 3.0

Growers can now start their annual fight against weeds with the lightning-fast burndown of Gramoxone® SL 3.0 herbicide. Formulated for optimum efficiency, the increased active ingredient load leads to lower application volumes and reduced handling. Backed by knowledgeable Syngenta field sales representatives and agronomists, Gramoxone SL 3.0 provides trusted brand performance against tough weeds like Palmer amaranth, waterhemp and barnyardgrass. For more information, see “Start Clean in 2020,” page 15, or visit www.syngenta-us.com/herbicides/gramoxone-sl-3.0.





Gary Prescher inspects early-season growth in a Golden Harvest cornfield on his farm in Delavan, Minnesota.

PRODUCT UPDATES

Tavium Plus VaporGrip Technology Performs

As the market's first premix residual dicamba herbicide, Tavium® Plus VaporGrip® Technology from Syngenta delivered exceptional first-year weed control, despite early-season weather challenges, including record rainfall. (See "Keep the Fields Clean," page 12.) Following the April 2019 registration by the U.S. Environmental Protection Agency, Tavium offered dicamba-tolerant soybean and cotton growers a convenient new tool to manage key ALS-, PPO- and glyphosate-resistant broadleaf and grass weeds with two effective sites of action for contact and residual control.

Tavium contains built-in residual control to manage resistant weeds and maintain clean fields throughout the season. The addition of S-metolachlor with dicamba in a premix offers up to three weeks longer residual control than dicamba alone.

Growers can use Tavium at the preplant, planting and early post-emergence stages on Roundup Ready 2 Xtend® Soybeans and Bollgard II® XtendFlex® Cotton. It targets driver weeds, including waterhemp, Palmer amaranth, horseweed (marestail), common and giant ragweed, kochia, morningglory, barnyardgrass, and foxtail. Tavium controls 21 different weeds when applied preemergence and 63 weeds as a post-emergence herbicide.

For more information, visit www.syngenta-us.com/herbicides/tavium.



Golden Harvest Seed Performs in Fields Across the Midwest

Although 2019 was a challenging growing season across the Midwest, Golden Harvest delivered the genetics, agronomy and service farmers needed to succeed.

Trials managed in 2019¹ show Golden Harvest® hybrids outperformed the competition with proprietary germplasm and elite genetics bred and tested locally. For example, in the upper Midwest, Golden Harvest corn G02K39-5122 E-Z Refuge® brand outyielded Pioneer® products by 10.4 bu/A in 84 comparisons.

Golden Harvest varieties also outshined the competition with advanced genetics and the latest

WHAT'S *in* STORE

traits and technologies to help farmers maximize their yield potential. For example, in eastern Iowa and northern Illinois, Golden Harvest soybean GH2818E3 brand outyielded Asgrow® products by 6.0 bu/A in 55 comparisons.

Visit www.GoldenHarvestSeeds.com for local yield results.

1. Syngenta and independent trials, 2019



NK Seed Investment Benefits Farmers

After a growing season predictable only in its unpredictability, harvest showed NK® corn and soybeans deliver the yield stability farmers need.

Proving the impact of a decade of industry-leading genetic gain, NK corn outperformed competitors across the U.S. For example, NK0472-5122 E-Z Refuge® brand outyielded Pioneer® hybrids by an average of 16.5 bushels per acre (bu/A) in 22 Iowa comparisons.

NK soybeans, meanwhile, continued to build on a reputation of consistently strong yields. With more than 50 years of advanced soybean breeding focused on delivering the best genetics with strong defensive traits, NK generated results that included a 5.2 bu/A advantage for S28-E3 brand over Asgrow® varieties in 45 Nebraska comparisons.

“Growing seasons like we saw in 2019 drive NK breeders to develop corn and soybean seeds that can deliver value regardless of Mother Nature,” says Jim Shertzer, head of NK marketing. “Those efforts are paying off for farmers.”

For local yield results, visit www.NKSeeds.com.



NEWS AND EVENTS

TRADE SHOWS AND CONFERENCES

To find out what's new and exciting at Syngenta in 2020, please visit our booth at any of the upcoming trade shows listed below.

February 2020

12–15	National Farm Machinery Show Louisville, Kentucky
27–29	Commodity Classic San Antonio, Texas
28–29	Mid-South Farm & Gin Show Memphis, Tennessee

Matt Dolch, Syngenta district manager for the western Corn Belt, inspects NK seed at Central Valley Ag Cooperative in York, Nebraska.





FIND 5-15 MORE BUSHEL AN ACRE THAN WITH ANY OTHER HERBICIDE.

Only Acuron® corn herbicide unlocks your full yield potential. When used in a preemergence application at full label rates, Acuron lets you discover the extra bushels no other herbicide can. To start finding more bushels, visit Acuron-Herbicide.com



 **Acuron**®

 **syngenta**®

Acuron yield advantage range based on 2016 Syngenta and University trials comparing Acuron to Corvus®, Resicore®, SureStart® II, and Verdict®.

For more information on Acuron versus an individual product, ask your Syngenta representative.

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Take the Long View

When developing insect management programs, focus on potential return on investment, advise two Syngenta experts.

Q. What are the risks corn growers should consider when evaluating a reduction in their 2020 insect management program?

A. Tim O'Brien, Syngenta traits manager: As growers evaluate what to remove from their expenses, there are risks in eliminating items that provide clear economic benefits. One of these risks could be leaving their crop vulnerable to insect feeding. Most of the corn production areas in the U.S. face pressures from various insect pests. Damaging pests like earworms, armyworms, cutworms and corn borers continue to cause economic damage. Insect pests like western bean cutworm have expanded their geography, feeding on more ears across the Corn Belt. Scouting for these pests can be time consuming; and by the time growers schedule rescue treatments, a great deal of economic injury may have already occurred.

Additionally, growers who plant corn following corn and those located in geographies with either western corn rootworm (CRW) variant or northern CRW extended diapause could experience root feeding from corn rootworm larvae, if they don't take preventative measures.

A. Meade McDonald, Syngenta commercial product lead for insecticides: Insect pressure in corn can be unpredictable and sporadic due to weather conditions and other environmental factors. A decision to forgo investing in technology, including the use of *Bt* traits and crop protection products, increases the risk of unexpected damage to the crop, which can negatively impact yields, quality and harvest efficiency.

In the case of CRW management strategies, it's important to remember that to mitigate the risk of damage, you have to target control during the larvae stage, when the pest can cause the most economic damage to the crop. Because of this risk, corn growers need to use CRW traits and/or a soil-applied insecticide at planting. Often, foliar

applications or rescue treatments aren't viable options, as the damage to developing root systems is already done.

Q. What insect management advice can you offer corn growers in 2020?

A. O'Brien: Growers can work with their Syngenta reseller to review the potential insect pressures of each field. Once they've identified these pressures, they can develop an insect management plan for each field. This plan should establish if and when the grower should use an insect control technology for each insect.

CRW is the most destructive corn pest in the U.S. and costs growers more than \$1 billion annually in reduced grain yield and control measures. Growers concerned about this pest should have a multiyear management plan in place for each field that incorporates multiple control strategies, including crop rotation, CRW-traited corn hybrids, soil-applied insecticides and adult beetle management.

A. McDonald: For CRW in particular, scouting individual cornfields to monitor the number of CRW adult beetles in the current year can help determine CRW pressure the next year. If scouting reveals 1 to 1.5 beetles per plant, CRW larval feeding activity may be high the following year. Developing a CRW management plan for each field helps growers understand which products or technologies are required to limit the risk of damage. With an effective plan in place and the most robust trait package and/or soil-applied insecticides deployed, corn growers can enjoy peace of mind and be confident that they can control CRW and achieve higher yields with excellent harvest efficiency.

Q. What Syngenta solutions are available for CRW in particular?

A. O'Brien: For growers interested in controlling CRW, our "Take Control of Corn Rootworm" decision guide can help

them build an effective management plan. Available on the Syngenta U.S. website or from one of our representatives, the guide provides tips on using crop rotation, CRW traits and insecticides.

If possible, growers should first consider crop rotation to a nonhost crop like NK® or Golden Harvest® soybeans. Force® brand soil-applied insecticides for larvae control and Warrior II with Zeon Technology® insecticide for adult beetle control provide additional ways to protect the corn crop and reduce future CRW populations. Growers looking for control of more insects may want to consider Agrisure Duracade® 5222 E-Z Refuge® trait stack, as it controls 16 damaging pests — both above and below the ground — more than any competitive trait stack. Agrisure Duracade expresses a protein that binds differently in the gut of CRW and provides a new trait option for CRW management, when used in rotation with other industry trait technologies, including Agrisure® 3122 E-Z Refuge.

A. McDonald: Growers across the Corn Belt have come to know and trust Force 3G soil-applied insecticide for the past 30 years because of its unique mode of action for consistent, reliable control of CRW, even under high pressure situations. In 2017, we introduced Force Evo, a liquid, fertilizer-compatible formulation with excellent cold tolerance and improved handling and cleanout through a closed application system. In 2018, we introduced Force 6.5G, a higher loading granular formulation that is packaged in a 20% lighter bag, covers 175% more acres and has 50% less dust, which means fewer bags to handle, haul and load than Force 3G, with fewer stops to refill. Ultimately, these new Force formulations offer improved handling and convenience and enable increased at-planting efficiency with the same best-in-class control of CRW.

This spring, when the weather window opens and it's time to plant corn, Syngenta technologies and the people behind them are ready to help growers establish their crop more efficiently and with greater confidence. For more information, growers and resellers can contact their local Syngenta representative or go to our website at www.syngenta-us.com/crops/corn. 🌱

INTERVIEWS BY SUSAN FISHER

“A decision to forgo investing in technology, including the use of *Bt* traits and crop protection products, increases the risk of unexpected damage to the crop.”

— MEADE MCDONALD



TIM O'BRIEN
Traits Manager
Syngenta

“CRW [corn rootworm] is the most destructive corn pest in the U.S. and costs growers more than \$1 billion annually in reduced grain yield and control measures.”

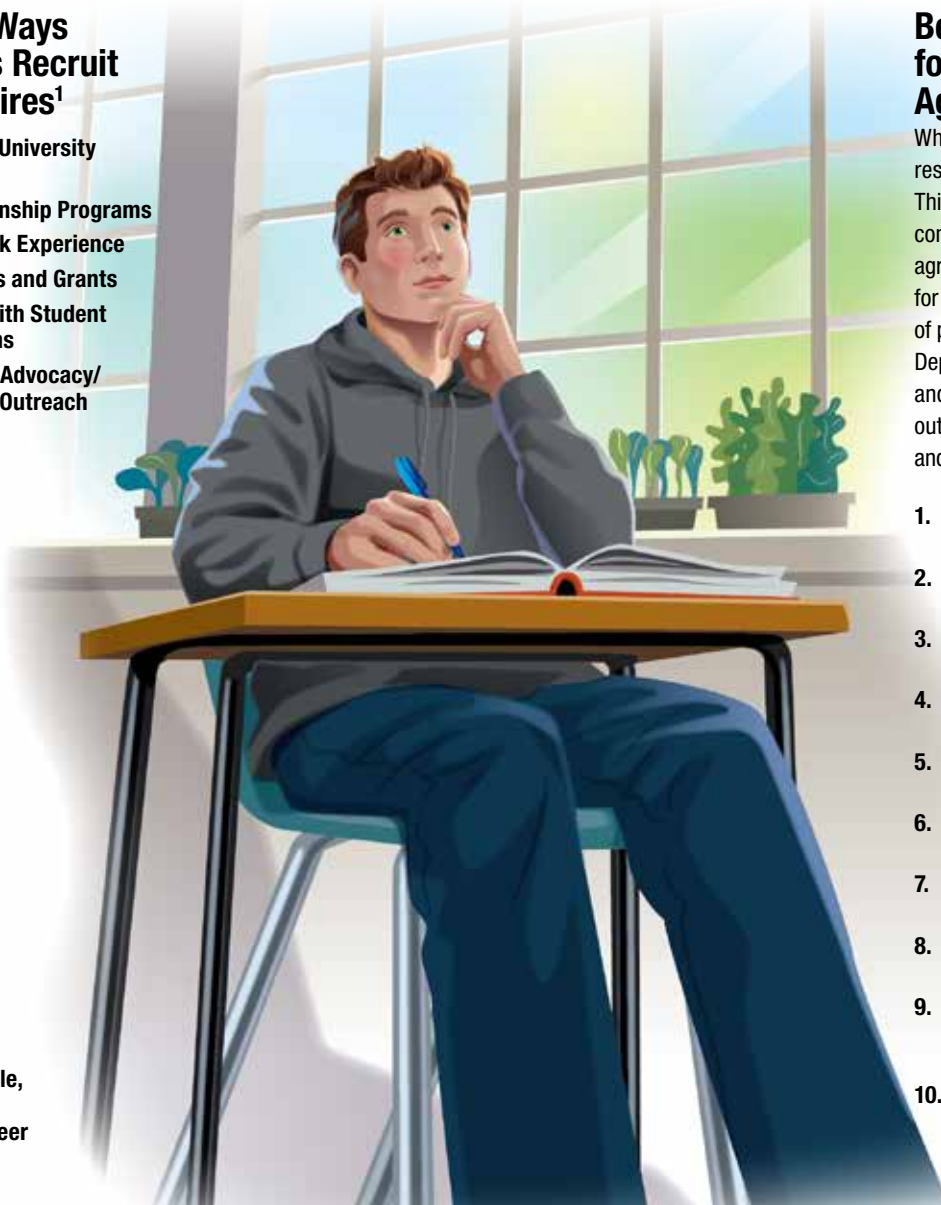
— TIM O'BRIEN

MEADE MCDONALD
Commercial Product
Lead for Insecticides
Syngenta

CAREER PATHS IN AGR

The 6 Top Ways Companies Recruit Potential Hires¹

1. College and University Recruitment
2. Formal Internship Programs
3. Student Work Experience
4. Scholarships and Grants
5. Affiliation With Student Organizations
6. Agricultural Advocacy/Educational Outreach



Best Universities for Earning an Agricultural Degree

Which universities have the most respected ag-related programs? This listing, compiled by data science company Niche.com², includes the top agricultural science degree programs for 2020. Niche used data from dozens of public data sources — including the Department of Education, U.S. Census and FBI — along with real reviews and outcomes to determine rankings, grades and profiles.

1. **Cornell University**, Ithaca, New York
2. **University of Florida**, Gainesville, Florida
3. **University of Georgia**, Athens, Georgia
4. **Texas A&M University**, College Station, Texas
5. **University of Minnesota Twin Cities**, Minneapolis, Minnesota
6. **Kansas State University**, Manhattan, Kansas
7. **University of Wisconsin - Madison**, Madison, Wisconsin
8. **North Carolina State University**, Raleigh, North Carolina
9. **California Polytechnic State University**, San Luis Obispo, California
10. **University of California - Davis**, Davis, California

See related article, “Expert Tips for Launching a Career in Ag,” page 24.

AG COMPANIES INCREASE RECRUITMENT EFFORTS

How are ag companies reaching out to find new recruits? These key statistics from the 2018–2019 *Agribusiness HR Review*¹ shed light on their efforts:

83.33%
of ag companies used social media for recruitment in 2018, up 12.07% from 2017 figures.

51.9%
of ag companies plan to increase new graduate recruitment efforts in the next five years, a jump from 41.58% in 2017.

54.29%
of ag companies say the most important reason for focusing on new graduate recruitment is competition for talent.

ICULTURE

The future for students interested in agriculture is bright. With demand for new hires outstripping supply, there is plenty of opportunity for the next generation.



Top Salaries for Ag Careers

Which ag-related professions offer the highest salaries? Here is a ranking from career advice company CareerAddict.⁶

1. **Agricultural Lawyer** — Average annual salary: \$115,820
2. **Agricultural Economist** — Average annual salary: \$104,920
3. **Biochemist** — Average annual salary: \$91,190
4. **Environmental Engineer** — Average annual salary: \$86,800
5. **Bioinformatics Scientist** — Average annual salary: \$80,200
6. **Agronomy Sales Manager** — Average annual salary: \$76,470
7. **Agricultural Engineer** — Average annual salary: \$74,480
8. **Food Scientist** — Average annual salary: \$71,990
9. **Animal Geneticist** — Average annual salary: \$68,840
10. **Agricultural Operations Manager** — Average annual salary: \$61,080

THE COMING CHANGES IN AG EDUCATION

How is education and training for ag careers expected to change in the next few years? An educational survey from Deloitte LLP shows that 75% of educators expect digital content will replace printed books by 2026.³ Here are a few other emerging trends from Purdue University Online⁴:

- ◆ **Biometrics** — Will be used to recognize the physical and emotional disposition of students so that curriculums can be tailored to their individual needs.
- ◆ **Augmented Reality Glasses** — Will layer data on top of what we naturally see to allow for a real-world learning experience.
- ◆ **Multitouch Surfaces** — Could allow students from around the world to collaborate, with videos and other virtual tools streamed directly to the surface.

Ag Careers in High Demand

Which ag-related fields will experience the greatest growth in 2020? Progress in science and technology is making these professions likely candidates, according to the FFA website.⁵

1. **Drone Technologist**
2. **Hydrologists**
3. **Agriculture Communicators**
4. **Food Scientists**
5. **Precision Agriculture Technologists**

1. *Agribusiness HR Review*, 2018–2019 U.S. Data Release, 12th edition. AgCareers.com
2. "2020 Best Colleges for Agricultural Sciences in America," Niche. www.niche.com/colleges/search/best-colleges-for-agricultural-sciences
3. "2016 Digital Education Survey," Deloitte. www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-digital-education-survey.pdf
4. "The Evolution of Technology in the Classroom," Purdue University Online. online.purdue.edu/blog/evolution-technology-classroom
5. FFA New Horizons. "Predictions: Top 5 Agriculture Careers in 2020," Aug. 31, 2017. www.ffa.org/career-success/predictions-top-5-agriculture-careers-in-2020
6. Anchet, Michi. "Top 10 Highest-Paying Careers in Agriculture," Sept. 27, 2018. www.careeraddict.com/agriculture-jobs

Sibling Harmony

The 2019 #RootedinAg contest winner, whose brother ignited her passion for agriculture, also credits him for keeping the flame burning.

Growing up on a seventh-generation farm did not ordain a life in agriculture for Tammy Wiedenbeck, the 2019 #RootedinAg Contest grand prizewinner. As a young girl, she loved to roam the fields and check the cattle, but she also learned firsthand how a busy season on the farm can limit your opportunity for leisure.

"I got pretty jealous when my friends were getting together to go to the pool over the weekends, or when they'd be having sleepovers and I couldn't make it because I had to help my parents and brother work on the farm,"

Wiedenbeck says.

However, it was hard to stay jealous with her older brother, Doug, around. His passion for agriculture was infectious. He was 10 years her senior and eager to show her the ropes at Riverview Farms, their family's swine, beef and crop operation in Lancaster, Wisconsin.

"We've kind of joked that I was more like her second dad than her brother," Doug says. He taught her how to tie her shoes and how to drive a tractor. He also inspired her to start showing cattle. "I took her under my wing from a young age," he says.

Winning Words

Since those early days, Wiedenbeck has carved out a life in the agricultural community. As the social media coordinator for the Equity Cooperative Livestock Sales Association, she works to tell the stories of farmers across the Midwest on a daily basis.

Her schedule is full, but nothing can keep her away from the place where she first dug her roots into the earth. Nowadays, she co-manages Riverview with her parents, Doug and his wife. It's the perfect way to stay connected to the land her ancestors started working in 1836. As a bonus, she gets to work alongside her brother, who continues to inspire her. She honored that bond in the essay that helped her win the sixth annual #RootedinAg Contest.

"Doug was always my role model," Wiedenbeck says. "He's one of the hardest workers I know, and he's been there for me through thick and thin. He's got a full-time job at the Lancaster Ag Research Station, and he's raising five young children with his wife. I thought this contest would be a really great chance to recognize him."

Syngenta named Wiedenbeck the grand prizewinner, based on the number of online votes she received as well as the quality of her entry, as determined by a panel of judges.

"The Wiedenbecks' story is a testament to the ability of agriculture to bring people together," says Wendell Calhoun, marketing services operations manager for Syngenta. "Both siblings have stayed involved on their family's farm, even as they've gone on to seek second careers in the industry. At Syngenta, we think that's worth celebrating."

Paying It Forward

Wiedenbeck was one of three finalists, each of whom received a mini touch-screen tablet. As the grand prize-winner, she also received \$500. In addition, Syngenta split a \$1,000 donation across three organizations of her choice: the Grant County Cattlemen's Association, the Wisconsin Farm Bureau Foundation and the Lancaster FFA Alumni.

"I thought it would be a great chance to give back to some charities that helped build who I am today," Wiedenbeck says.

She chose the organizations because of their impact on her community, as well as on her own life. In college, her involvement with the Grant County Cattlemen's Association gave her the opportunity to attend events that taught her the basics of agricultural advocacy. Over the past few years, her involvement with the Wisconsin Farm Bureau Foundation has allowed her to meet farmers from every state in the nation. And the Lancaster FFA Alumni played a crucial role in setting her on the path to where she stands today: The group helped purchase her first heifer and sent her to myriad leadership conferences, where she acquired vital skills that still serve her well.

According to Carey Kreul, a representative of the Lancaster FFA Alumni, Wiedenbeck's contribution will give other students similar opportunities. The organization will use the donation to help fund different initiatives that may include a project animal, a student trip to the Washington Leadership Conference and/or a scholarship.

"There's no better classroom than working on a farm with the people you admire and love the most."

— TAMMY WIEDENBECK
#RootedinAg Contest Winner



Tammy Wiedenbeck, the 2019 #RootedinAg Contest winner, spends time on her family's farm with her brother, Doug, whom she honored in her contest essay, and dog Reggie. Below: The Wiedenbecks make farming a family affair. Sitting, from left to right: Rhonda, David, Vada and Richard. Standing, middle row, left to right: Charlie, AJ and Lucas. Back row, left to right: Tammy, Stacy and Doug.



SEE MORE PHOTOS.
www.syngentathrive.com/community



"We are happy to be one of the recipients of Tammy's donation," Kreul says. "Our organization strives to make an impact on our community by getting young people directly involved in and excited about agriculture."

Wiedenbeck knows that kind of hands-on experience can make all the difference.

"Dedication and determination — those are skills and values you can't teach in school," she says. "There's no better classroom than working on a farm with the people you admire and love the most. For me, those people have been — and will always be — my brother and our parents."

For more on the #RootedinAg initiative, visit www.syngentathrive.com. 🌱 STORY BY GLENN BERTRAM



**KEEP
THE
FIELDS
CLEAN**

An early-season focus on weed control pays off at harvest. *By Darcy Dougherty Maulsby*

Left to right: Danzey Nickel, sales representative for Syngenta, and growers David and Aaron Cross walk across a harvested cornfield in Lewis, Kansas, following the 2019 growing season.



SEE MORE PHOTOS.
www.syngentathrive.com/farmproduction

Sometimes it seems like you just can't catch a break in farming. For grower Kyle Hawkins, the recent challenges started in the fall of 2018, when wet conditions made it too difficult to work the ground. After knifing in anhydrous ammonia on those acres in April, Hawkins planned to work the ground before planting corn.

Then Mother Nature complicated those plans with more rain. "It was a heck of a year," says Hawkins, who farms near Bogard, Missouri, where he and his father, Gary, grow 7,000 acres of corn and soybeans. "Nothing worked right."

All this created more challenges with troublesome weeds in the area, including marestail, waterhemp, giant ragweed and morningglory.

Even if farmers' fields were clean at the end of the 2019 growing season, the yield damage may have already been done, says Dean Grossnickle, an Iowa-based agronomic service representative for Syngenta. "What 2019 taught us is that it can be wise to park the planter for a bit when it's time to focus on weed control," he adds. "We need to change our habits when it comes to weed management."

Develop a Weed Control Plan for 2020

The days of simple, one-pass weed control with one active ingredient are long gone. "Recent history has

taught us there's no easy button when it comes to weed control," says Brett Craigmyle, a Missouri-based agronomic service representative for Syngenta, who notes that waterhemp can pose big challenges in his area. "It's important to have a game plan for weed control in 2020."

Effective weed management means starting strong and including long-lasting residual control. "A ton of weeds went to seed in 2019, so you'll need a preemergent herbicide more than ever this spring," Craigmyle says. "Also, look for multiple sites of action with post-emergent products to help control your driver weeds."

Syngenta offers a wide variety of options, including Acuron® herbicide for corn and Tavium® Plus VaporGrip® technology herbicide for soybeans and cotton. These proven products may contribute to a higher return on investment potential while fitting into an effective resistance management program.

Acuron Delivers in Corn

Acuron controls more than 70 grass and broadleaf weeds for clean fields, all season long. It delivers 5 to 15 bushels more yield per acre than other herbicides, based on 2016 Syngenta and university trials that compared Acuron with Corvus®, Resicore®, SureStart® II and Verdict® applied preemergence at full rates.*

With four active ingredients (bicyclopyrone, mesotrione, S-metolachlor and atrazine), Acuron unlocks more yield potential than any other corn herbicide because it controls tough weeds other products are missing.

"Getting an extra 5 to 15 bushels an acre with Acuron is huge," Craigmyle says. "Acuron also provides excellent crop safety as both a preemergent and post-emergent herbicide and can handle a variety of environmental conditions, including the wet weather our area experienced in 2019."

Acuron offers application flexibility from 28 days preplant, including burndown, up to 12-inch corn. There's no comparison between a product like Acuron and generic products, Grossnickle adds. "If you cut corners with weed control, you may give up effectiveness and flexibility," he says. "I've seen guys try to save \$30 an acre, but end up spending \$50 to \$60 an acre because their generic weed control didn't work. Using a herbicide like Acuron has the potential to provide a great return on investment for growers because of its highly effective, dependable weed control and the likelihood of increased yields that may result."

Hawkins, a fourth-generation Missouri farmer, agrees. His family started incorporating Acuron into their weed

control program a few years ago. "I'm a believer in Acuron because I've seen how well it works," he says. "Our fields are cleaner than a pin, and there's no crop damage."

The benefits of choosing Syngenta crop protection products extend beyond weed control, Hawkins adds. "Crop safety is important, and there's no damage to set the crop back," he says. "Syngenta also has a great team of people who stand behind their products."

It was a much tougher situation for one of Hawkins' acquaintances who didn't use Acuron, opting instead for a herbicide that didn't offer the same level of residual control. "With all the rain, the corn got too tall before he could spray, and the weeds got away from him," Hawkins says. "There are so many things you can't control in farming, so why not maximize things you can control, like weed control? Then you've got one less thing to worry about."

Tavium Plus VaporGrip Technology Helps Boost Yields in Soybeans

Grower Aaron Cross, whose family grows wheat, corn, soybeans and milo and raises cattle near Lewis, Kansas, feels the same way about weed control in soybeans. He

Left to right: Whitney Venable, sales representative for Syngenta, speaks with growers Kyle and Abbi Hawkins about 2020 weed management on their farm in Bogard, Missouri.

“ I’m a believer in Acuron because I’ve seen how well it works. ... Our fields are cleaner than a pin, and there’s no crop damage. ”

— KYLE HAWKINS
Bogard, Missouri,
Grower



START CLEAN IN 2020

It's important for growers to plant into a weed-free seedbed to maximize their crop's yield potential. The 2019 growing season has made this tougher in 2020, however, due to these weather-related issues in many areas:

- A compacted 2019 growing season resulted in preemergent herbicides not being applied and post-emergent treatments not being used in a timely manner.
- Weed escapes in fields where farmers took the prevented-planting option in their crop insurance policies, due to excessive rain.

All this contributed to more weeds going to seed. The increased seed bank could mean heavier weed pressure in 2020, which demands an effective burndown treatment to avoid early-season weed competition with the crop.

Syngenta offers a portfolio of herbicides, including Gramoxone® SL 3.0, to help corn and soybean growers plant into a weed-free seedbed in 2020. "Gramoxone is fast acting and rainfast, with results in as little as 48 hours," says Dane Bowers, technical product lead for herbicides at Syngenta. "It's a convenient, dependable product that offers a nice tank-mix option with our other preemergent products."

Gramoxone SL 3.0, which Syngenta recently launched, is a more concentrated product than previous Gramoxone formulations. Its increased active ingredient load leads to lower application volumes and reduced handling.

"Gramoxone targets an alternative site of action to glyphosate, so it's an effective resistance management tool against tough weeds, including Palmer amaranth, waterhemp and barnyardgrass," Bowers adds.

For more information on Gramoxone SL 3.0, go to www.syngenta-us.com/herbicides/gramoxone-sl-3.0.



A field of young corn flourishes in Minnesota.

uses Tavium Plus VaporGrip Technology herbicide, the market's first dicamba premix. It manages key broadleaf and grass weeds in Roundup Ready 2 Xtend® Soybeans and Bollgard II® XtendFlex® Cotton.

"You've got to have bushels to sell to make money," says Cross, who estimates a 10-bushel-per-acre yield advantage on the acres where he used Tavium in 2019. "I look at effective weed control as an investment rather than a cost."

In soybeans, effective weed control can be achieved with preemergent herbicides like Boundary® 6.5 EC, BroadAxe® XC or Prefix® herbicides, followed by an early post-emergence Tavium application made to weeds less than 4 inches tall. Tavium manages driver weeds in soybeans, such as ragweed, marestail, Palmer amaranth and waterhemp. It offers built-in resistance management, convenience as a premix and flexible application from preplant through early post-emergence.

"After a tough growing season like 2019, you want weed control you can count on," says Pete Eure, technical product lead for soybean herbicides at Syngenta. "We're seeing three weeks' longer weed control with Tavium, compared with other dicamba products."

Lessons Learned in 2019

Many farmers were frustrated with the weather and disappointed by commodity prices in 2019, says Craig Austin, Ph.D., a Pennsylvania-based agronomic service representative for Syngenta. "While it can be tempting to cut corners with weed control in times like these, it's not worth the risk," he says. "You need to be proactive to keep your fields clean."

Grossnickle agrees that it doesn't pay to put weed control on the back burner. "With the wet conditions we had last spring, a lot of farmers were so focused on getting the crops planted that they figured they'd worry about weed control later, especially with soybeans," he says. "Early-season weed competition robbed a lot of yield potential, though, and there were a lot of weed escapes."

Proven weed control solutions from Syngenta offer more than peace of mind. They also make financial sense, Hawkins says. "If you skimp on weed control today, there's more to think about than how much yield you're losing this year. Investing in effective weed control now pays off in the long run."

Cross agrees and says, "I'm way ahead of this year's weed seed bank because of my weed control last year." 🌱

*Acuron yield advantage range based on 2016 Syngenta and university trials comparing Acuron with Corvus, Resicore, SureStart II and Verdict.

Prevention Is the Best Cure

A man with a beard, wearing a black zip-up jacket with a gold zipper and a logo that reads "Miravis Neo" on the chest, is looking down at a handful of golden-brown grain held in his hands. To his right, another person's hands are also holding a similar amount of grain. The background is a bright, snowy field.

Corn, soybean and wheat growers should have a proactive plan to manage this year's higher-than-normal chance of disease outbreaks.

By Sarah Pohlman



FROM PROLONGED FRIGID TEMPERATURES TO WIDESPREAD flooding, the 2019 season brought serious challenges to growers across the U.S. Corn, soybean and wheat growers experienced hit after hit of adverse weather conditions. Although the struggles of last season are in the past, potential consequences linger into 2020.

Starting the Year Right

Many corn, soybean and wheat diseases can overwinter, waiting for the right conditions to reemerge and wreak havoc on yields.

To prevent last year's yield-robbing diseases from reappearing, growers can take a proactive approach, which starts with carefully selecting the right hybrid or variety for their farm. Growers can also implement crop rotation so they are not growing their crops in fields with elevated fungal populations from the previous year.

"Rotating to nonhost crops is crucial to breaking up disease cycles, but it is not enough," says Eric Tedford, Ph.D., technical product lead for Syngenta. "Since some pathogens can overwinter for many years on crop residue, growers need to implement more forceful tactics."

Selecting the Right Fungicide

One of the most important tactics growers can deploy is selecting the right fungicide for their specific crop, Tedford says.

- **In Corn** — Corn growers have two excellent weapons in their battle against high inoculum levels. Since agronomists expect the pathogens that cause tar spot and *Fusarium* ear rot to overwinter, growers can count on Miravis® Neo fungicide to help protect their corn from these aggressive diseases. The fungicide also offers excellent control of Northern corn leaf blight and gray leaf spot, among other diseases.

"Miravis Neo is a three-way mix of powerful active ingredients, including

Left: Nathan Popiel (left) with Syngenta and North Dakota wheat grower Cameron Schulz (right) inspect recently harvested grain. Right: Trivapro fungicide is a product many corn growers turn to for effective disease management.



Adepidyn® fungicide,” Tedford explains. “It equips growers with disease control they can bank on and offers plant-health benefits.”

Trivapro® fungicide is another equally hardworking, long-lasting option. “Trivapro works overtime in the field with the best efficacy I’ve seen on common and Southern rust,” says Brett Johnson, fungicide product lead for Syngenta. “It also delivers exceptional control of gray leaf spot and Northern corn leaf blight.”

- **In Soybeans** — For soybeans, growers have two powerful options in the Miravis family to fight against disease. To protect against overwintering white mold and brown spot, Miravis Neo is an excellent option.

“We haven’t seen a product like Miravis Neo that offers the same level of plant-health benefits and white mold suppression,” says Griffin Schaub, a sales agronomist for Prinsburg Farmers Cooperative in Prinsburg, Minnesota. “It has brought an extra element to the farm that really gives us trust in the product, its flexibility and its performance.”

Additionally, Southern soybean growers have another fungicide in their toolbox. Miravis Top is custom-built to control the toughest soybean diseases, including target spot, strobilurin-resistant frogeye leaf spot and brown spot.

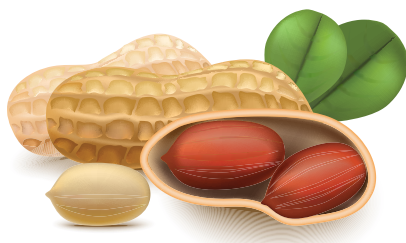
“Southern soybean growers experience tough conditions each year,” Johnson says. “But Miravis Top is specifically engineered to take on those challenges, protect yield and optimize income potential.”

- **In Wheat** — To combat head scab, wheat growers can turn to Miravis Ace for superior disease control. After applying Miravis Ace to his wheat in 2019, North Dakota grower Cameron Schulz saw a 3-bushel per acre yield increase. “That’s in addition to experiencing unique application flexibility,



“2019 was a challenging year, but it was the year where fungicides really paid dividends. ... Risk is always out there, and you always want to prepare yourself and be protected.”

— NATHAN POPIEL (at right)
Syngenta Agronomic Service Representative



DOUBLE THE PEANUT PROTECTION

PEANUT GROWERS DID NOT experience the soft side of Mother Nature in 2019. While still feeling the aftermath of Hurricane Michael, they were dealt a challenging start with soaked fields and an excessively wet spring. Then, after they planted the crop, these same growers suffered a stark contrast — excessive heat, which created a prime habitat for two of the top yield-robbing diseases in peanuts: white mold and leaf spot.

Trouble Brewing in the Soil

Many growers will remember 2019 as the year white mold picked their pockets. The hot temperatures and a cycle of wet and dry conditions amplified white mold infection, making it more damaging and widespread than in previous years.

“We saw early, rapid infection of white mold in most of the peanut crop,” says Wilson Faircloth, agronomic service representative for Syngenta. “There wasn’t a field in Georgia that didn’t have plants that were

taken out because of white mold. It was that intense.”

Although white mold was especially fierce, growers who applied Elatus® fungicide saw significantly less pressure in their fields.

“We historically have had high white mold pressure,” says Virginia peanut grower Ray Davis. “But after using Elatus fungicide, we did not have any white mold. Elatus has a great formulation and is easy to work with. I’d recommend that other growers give it a shot.”



because Miravis Ace also widens the application window by allowing applications from as early as 50% head emergence up to flowering,” notes Nathan Popiel, the Syngenta agronomic service representative for Schulz.

“I would recommend Miravis Ace because it just works,” Schulz says. “Growers who didn’t spray had a lot of head scab last year. We didn’t get any because of Miravis Ace.”

Looking Back to Move Ahead

In 2019, many growers were taken by surprise when weather conditions took a turn for the worse and never seemed to let up. The year began with a cold, wet spring, forcing many growers to plant late, replant or not plant at all. This combination of sustained bad weather into the summer months led to an increase in heavy disease pressure across many geographies and took a significant toll on yields because crops didn’t reach their full genetic potential.

Corn growers saw more gray leaf spot and tar spot than in previous years. Soybean growers fought a fierce battle against white mold and target spot, and wheat growers saw *Fusarium* head blight or head scab in numerous fields. For those who didn’t apply fungicides, the unanticipated weather conditions throughout the spring and summer, combined with high disease pressure, significantly damaged their crop quality and yield.

But growers who applied a preventive fungicide, such as Trivapro in corn or the Miravis family of brands across a variety of crops, saw significantly less disease presence and damage to their fields.

“2019 was a challenging year, but it was the year where fungicides really paid dividends,” Popiel says. “As the 2020 season gets underway, I recommend keeping an eye on that rearview mirror and remembering what happened in 2019. Risk is always out there, and you always want to prepare yourself and be protected.” 🌱

Double Trouble in the Leaves

Leaf spot, a disease that causes premature defoliation of the plant, made a light appearance in fields early in the season, then became more aggressive. Growers, who annually expect pressure from leaf spot, now have a tool to help them effectively combat the disease.

2019 was the first full year Miravis® fungicide was available to peanut growers, and it offered their crops better protection, flexibility and longevity, even under heavy disease pressure.

“A once-in-a-lifetime fungicide, Miravis really brings leaf spot and foliar disease control to another level,” Faircloth says. “There was a noticeable difference between fields that received Miravis applications and those that didn’t.”

The Complete Package

With heavy disease pressure last season, it’s no surprise that agronomists expect inoculum levels to be high in 2020. However, by building a spray program with Elatus and Miravis, growers may receive double the peanut

protection with a complete package of white mold and leaf spot control.

“Miravis plus Elatus has changed our disease management program,” says Georgia peanut grower Ken Hall. “It helps keep the plants healthy, there’s less disease, and that’s going to help with yield.”

Not only can growers count on the Syngenta fungicides for exceptional white mold and leaf spot control, but they can also feel confident when it comes to yield potential. Three years of field trial results showed a 200 to 500 pound-per-acre increase when

peanut growers added Miravis to the foundation program of Elatus. Additionally, the complementary power of these two products resulted in two fewer fungicide applications, Faircloth notes.*

“Elatus and Miravis give growers the power to take on the foliar and soilborne diseases that will try to diminish their yield and may lower their bottom lines in 2020,” he says.

* Data derived from 26 field evaluations during both internal Syngenta and cooperator trials at the University of Georgia, Auburn University and the University of Florida, 2016 to 2018. The Elatus + Miravis program was a five-application program, with Elatus applied @ 9.5 oz/A approximately 60 and 90 days after planting.

ACCELERATING

New corn breeding facility helps Syngenta

TO succeed in challenging economic times, farmers need elite corn hybrids with the latest trait packages. A new \$30 million investment at the Syngenta research and development (R&D) and seed production site in Nampa, Idaho, is helping growers meet that critical need.

“The Trait Conversion Accelerator is a highly automated corn breeding facility that will help us deliver the corn seed products farmers need to be successful,” says David Hollinrake, regional director for Syngenta in North America. “It will also give growers much-needed choice in traits and hybrids.”

The Nampa facility features state-of-the-art greenhouses and laboratories and will accommodate a majority of the Syngenta North American corn trait conversion work, which was previously done in open field or semicontrolled environments. It will provide a reliable, controlled growing environment for incorporating desired genes from Syngenta trait donor sources into elite cultivars or breeding lines — a process known as marker-assisted

At its Trait Conversion Accelerator facility in Nampa, Idaho, Syngenta has equipped greenhouses with LED lighting to maintain ideal plant health year-round. The lights project on the red and blue spectrum, giving the greenhouses a purple glow.

ING INNOVATION

deliver improved traits faster. | *By Brad Bremer*



backcrossing. As a result, Syngenta will be able to introduce market-leading traits into the company's most advanced corn germplasm faster and more efficiently.

Faster Access to Corn Traits Matters

Iowa farmer Kevin Ross, president of the National Corn Growers Association, was in Nampa for the 2019 Trait Conversion Accelerator ribbon-cutting.

"Investments in seeds R&D are important to corn growers and to my farming operation," Ross says. "Corn traits help me farm more sustainably and increase my return-on-investment

potential. Faster access to corn traits coupled with elite genetics matters. That's why facilities like Nampa are important."

Ross adds that advances in ag technology have not only assisted today's producers in meeting increased demand for a safe and abundant grain supply, they have also benefited rural economies and the environment. "They will

help us feed a growing, global population and extend this same opportunity to the next generation," he says.

Idaho State Department of Agriculture Director Celia Gould was also on hand for the introduction of the Trait Conversion Accelerator. She says that although U.S. agriculture is currently struggling, the economic challenges facing the industry are cyclical in nature.

"We go through these cycles, and the reason that we come out on top is because we can do things more effectively than a lot of nations can," Gould says. "This facility is one of the pieces giving us that leading edge — that cutting edge that helps us do things better."

Collaborating With Growers

Increasingly, Syngenta scientists are working closely with growers — for everything from precommercial testing and purpose-driven product development to improving operational efficiencies.

According to Trevor Hohls, Ph.D., Syngenta global head of seeds development, this approach is how Syngenta is getting closer to the markets and the customers it serves. In turn, this partnership approach results in growers having access to the products they need — and want.

"For us, it's all about driving on-farm, collaborative innovation," Hohls says. "We like to think that we're innovating with our farmer customers, versus innovating at them."

The Nampa facility is helping to make this concept a reality, Hohls notes. "By using a site like Nampa, we can take product concepts that we've worked on with our customers — in terms of co-creation on-farm — and we can deliver traits that we develop in that process way more effectively," he says. "The Trait Conversion Accelerator is critical for us because it brings the germplasm development pipeline together with our trait development pipeline. And so, when we think about the range of value-added traits that we can put into our lines or our hybrids, we can certainly accelerate."

Hohls adds that Syngenta chose the Nampa site for this investment in trait conversion because it offers an excellent combination of climatic factors (e.g., solar radiation and humidity), as well as access to a highly skilled workforce.

All About Acceleration

According to Joe Bevilacqua, North America corn trait introgression operations lead for Syngenta, this new facility is the culmination of years of preparation and planning and a prime example of the Syngenta commitment to accelerating innovation.

"The core of this facility is all about acceleration," Bevilacqua says. "Specifically, we are able to deliver traited products quicker and more reliably to the marketplace for hybrid seed production." (See "Understanding Trait Introgression," page 23.)

Customers of the NK® and Golden Harvest® corn seed brands will benefit from faster access to more hybrids with the latest Agrisure® trait technologies.

"Having a controlled environment will allow us to put the right nutrients, the right temperatures and the right amount of light into the protocol, so we can deliver our top traits in our top genetics to our customers," Bevilacqua adds.

At Nampa, Syngenta is building on a presence that was established 30 years ago, when it began as an R&D station with a biotech lab. The site includes 90 acres of farmland, considered to be some of the best ground in Idaho's Treasure Valley, widely known for great seed production.

The Nampa site is also home to the Syngenta Center of Excellence for large-seeded vegetables and the global large-seed distribution center for R&D vegetables, including sweet corn, snap peas and garden beans.

Investing in Farmers' Success

Syngenta is in the midst of realizing the benefits of a five-year, \$400 million incremental investment in its North American seeds business. This has enabled the company to significantly increase its breeding and product testing capacity and pursue infrastructure projects, like the one in Nampa.

"Our message to farmers is simple: We're here for you," Hollinrake says. "Syngenta is committed to accelerating innovation. This means developing products that go beyond current limits and providing farmers with unique and meaningful choice." 🌱

"Corn traits help me farm more sustainably and increase my return-on-investment potential. Faster access to corn traits coupled with elite genetics matters."

— KEVIN ROSS
Iowa Farmer and President of the
National Corn Growers Association

UNDERSTANDING TRAIT INTROGRESSION

When developing corn hybrids that offer agronomic benefits — such as insect control, herbicide tolerance and water optimization — scientists employ a breeding technique called trait introgression.

Syngenta uses trait introgression to incorporate a desired trait into existing elite germplasm — preserving the performance of the germplasm and adding the benefits of the introduced trait. The Syngenta Nampa Trait Conversion Accelerator in Nampa, Idaho, will provide the capabilities needed to optimize this crucial process.

“Trait Introgression is a process where we take all the new inbreds through a process where we add our traits,” says Donna Delaney, Ph.D., North America trait introgression lead for Syngenta, who notes that inbreds are offspring that result from the breeding of closely related plants. “What comes out is essentially the same inbred that we started with, but it now has traits that will bring benefits to growers.”

Delaney says trait introgression is a multistep, multigenerational process. Corn breeders begin by matching each inbred to a donor line that has the desired traits.

“We then take it through a series of steps where we are crossing back to our target inbred, selecting for traits and using DNA markers to help us identify the plants that have the highest percentage of target inbred,” she says. “With each successive cross back to our target inbred, we get closer and closer to the original inbred. The last step is to self-pollinate the plants to make true breeding lines that are handed off for testing.”

Quickening the Pace

Syngenta is constantly looking for ways to make the trait introgression process faster and more reliable. One way of doing this is by using marker-assisted selection.

“This is a selection process where corn breeders use a panel of DNA markers — approximately equally spaced across all the corn chromosomes — to identify plants in segregating populations that have the highest percentage of markers matching the target inbred,” Delaney says. “These selected plants are pollinated and taken forward to the next generation.”

Another way is harvesting at an immature stage to extract embryos. This process, called embryo rescue, is a series of in vitro techniques used to promote the development of an immature embryo into a viable plant.

“Embryo rescue saves us about 30 days per generation or five months total in the introgression process,” Delaney says. “It also provides flexibility in our timeline. This allows us to space out, or ‘workload level,’ the process to help make sure we can more quickly and reliably turn out new traited products to help our customers be more successful.”

Joe Bevilacqua, North America corn trait introgression operations lead, Syngenta, provides visitors with an overview of controlled pollination.



Expert Tips for Launching a Career in Ag

Jobs in agriculture abound, but students and grads still have work to do before landing their dream jobs.



Compared with previous generations, new college graduates are more likely to quickly land plum jobs in the fields of their choosing. “The job market has swung widely to the side of the job seeker,” says Erika Osmundson, director of marketing for AgCareers.com.

AgCareers.com is an online career site and human-resource services provider for agriculture, biotechnology, food and natural resources companies. Last year, AgCareers.com processed more than 51,000 applications through its website. “As long as you’re an employable

person and have some flexibility in what you want to do and where you want to be, there are opportunities out there,” Osmundson says.

While enrollment in ag programs has increased recently, it doesn't come close to the industry's demand for talent in every area. Less than 1% of total postsecondary enrollment is in the ag field, while the number of job openings in the industry is much greater than the number of ag-related graduates. When that shortage is combined with baby-boomer retirements and competition for talent from other ag and non-ag companies, it's easy to see why the job market is looking so bright for the next generation of ag leaders.

But high school and college students still need to polish their soft skills, seek internships or other valuable work experiences, and take classes relevant to the ag careers they're interested in, says Robin Thomas, commercial college recruitment lead for Syngenta. “And it's becoming more and more important to have the ability to use technology and to apply it strategically,” Thomas adds.

Create Opportunities to Stand Out

Internship participants and full-time job seekers need to develop and strengthen their soft skills. These skills include critical thinking, being creative, dealing with change, effectively communicating, leading, problem-solving and working within a team.

“The challenge with soft skills is that, until students or graduates are put in positions where they need to use them, they don't get stronger,” Osmundson says. “They need to practice them.”

Chris Long, a former collegiate recruiter at Syngenta who recently became a human resources generalist at the company, adds, “One of our biggest challenges on the early talent front is finding the new professionals who have soft skills and the ability to articulate what it is they are passionate about from a career perspective.”

To gather insight into what a role entails on a daily basis, Thomas recommends students start early — the earlier, the better.

“If high schoolers think they're interested in a particular field or role, they should job shadow someone who does what they think they want to do,” Thomas says. “If job shadowing isn't available, interviewing a professional about the job provides a lot of insight into what the role entails and if it interests them.”

To develop soft skills in high school, Thomas recommends students participate in groups, such as the 4-H Club and the National FFA Organization.

Make Connections

Many of the same principles apply during college. “We wholeheartedly believe that college and university students

are learning key soft skills through involvement in campus organizations, such as Agriculture Future of America and others,” Osmundson says.

Students need to stand out. “I can't emphasize how much of an impact it makes when college freshmen come to career fairs or other student events and introduce themselves, hand me a resume and tell me what they would like to do upon graduation,” Thomas says.

Long also advises students to attend career fairs — dressed professionally and with a clean, easy-to-read one-page resume in hand. “When they can do a good job articulating to us exactly what they're passionate about, we better understand where they're going to be the most productive within the organization and can help them find a role that best matches their interests,” he says.

And while ag backgrounds can be very helpful, Long notes they're not necessary. “We want to diversify the level of thought and ideas that we're bringing into the company,” he says. “That gives us an edge over the competition.”

Take Advantage of College Job Placement Services

Long encourages students to use the on-campus career services centers their colleges and universities offer. “A lot of colleges offer mock interviews, resume preparation and coaching services to teach students how they can best network and introduce themselves to reps from companies they would like to work for,” Long says. “We can tell when a university has taken the time to groom and prepare its students, versus the ones that don't.”

Going to career fairs and company-sponsored events outside the classroom is a great way for students to meet recruiters and land internships or positions in co-op programs, in which students work three months and then work part time or go to school full time the following three months.

“If college students don't have an internship or some relevant work experience, they are less competitive for entry level roles upon graduation,” Thomas says. “These experiences are critical for helping students get a foothold in the companies they want to work with and can help students decide exactly what they want to do.” 🌱

STORY BY ANN BEHLING WOLF

“The job market has swung widely to the side of the job seeker. As long as you're an employable person and have some flexibility in what you want to do and where you want to be, there are opportunities out there.”

— ERIKA OSMUNDSON
Director of Marketing
for AgCareers.com



Up Against the Clock

Moving products to and from farms is essential to the ag industry, which is why current regulations need clarification and flexibility.

The ag industry, which includes farms of every size across every state, represents about \$80 billion of the U.S. gross domestic product. One thing all have in common: They must bring supplies in and ship their products out, making them dependent on transportation. Therefore, good transportation policies are critical to ag.

“Given the inherent geographic limitations many of our farmers face in getting goods to market, it’s important that federal regulations provide the flexibility needed for the safe, humane and market-efficient transportation of agricultural commodities,” says Sen. John Hoeven (R-N.D.).

Toward that goal, the now-defunct Interstate Commerce Commission introduced Hours of Service (HOS) regulations in the 1930s for truckers, limiting the amount of time property- and passenger-carrying drivers can be behind the wheel. The regulations have changed over the years, always around the common themes of safety and driver fatigue, says Levi Wright, North American logistics operations manager at Syngenta. But the regulations are causing perplexity across ag because of the way they are currently written. What is clear is that there needs to be easily understood standards that protect truck drivers and the people who share the road with them. Driver fatigue is one of the primary causes of fatal accidents on the road.

Challenges and Uncertainty

Producers are objecting to a lack of flexibility and an abundance of

exceptions around what’s being hauled and where. Hauling ag products is not like hauling other materials.

That’s what Hoeven often hears from his constituents. “In recent years, many of our producers have raised concerns that the HOS regulations are just not working for them — particularly for those transporting cattle, pork and honey bees,” he says. “Drivers transporting these animals and insects often have long distances to travel from North Dakota to processing facilities as far away as Texas and California. These drivers cannot just pull over to a truck stop — doing so could endanger the lives of the animals.”

Ag haulers need to be able to react to the situation on the road, says Joe Wynne, vice president of operations at Wynne Transport. “One of the big hurdles is that once movements start for the day, you’re on a ticking clock, whether you run into rush-hour traffic or there’s an accident that holds you up on the highway,” he says. “A driver should be allowed to foresee he’s going to be in the city at rush hour and take a break, let rush hour happen and then truck through after, but not lose that time. That’s important because how safe are you when you feel like a clock’s chasing you all the time?”

The 150-air-mile rule also creates some confusion: When drivers pick up the commodity and drive within 150 miles, they’re exempted from a lot of the rules. “But it gets tricky because the exception is tied to commodities, whether you’re hauling trees versus taking fertilizer out to the field,” Wynne says. “The guidance is not very clear: Does the exception originate from where I pick

up the product, or does the exception originate from where the product originated? And if I'm coming back empty, do I still get to operate under that 150-air-mile radius? The regulations make exemptions for different items, but there's no written rule to say they'll back us if something happens when they waive those rules."

Today, even more issues are arising around the recent electronic logging device (ELD) mandate. It requires an ELD for operating a commercial motor vehicle to document the distances and time that a driver is operating. This replaces the older paper graph log system and is much more accurate and transparent. However, as companies install the devices to satisfy the mandate, some drivers have reported technical issues, such as inaccurate mileage or location reporting and failed data transfer.

Fortunately, for smaller companies, needed exemptions may be coming. "Regulators are giving a second hearing to a petition that would exempt trucking operations with fewer than 50 employees or less than 20 trucks from the rule," Wright says. "This would create two classes of truck drivers, with most being allowed to use paper logs rather than ELD."

Improvements Needed

Clarity and flexibility in the rules are what's needed, Wynne says, and the ag industry should make its voice heard about that. "The current administration has opened up a dialogue with the major trucking associations and had some open forums, and there seems to be more discussion around flexibility in hours of service," he says.

Hoeven is working on introducing some of those changes. "I worked with Secretary of Transportation [Elaine] Chao and the Federal Motor Carrier Safety Administration at the Department of Transportation (DOT) to provide additional flexibility under the 150-air-mile agricultural exemption to the HOS regulations," Hoeven says. "In addition, the department recently issued a proposed rule that would create much-needed flexibility for carriers of all goods."

Hoeven hopes even more can be done, specifically for ag haulers. "I have introduced bipartisan legislation with Sen. Michael Bennet (D-CO) — the Modernizing Agricultural Transportation Act (S. 600), which would establish a working group at the DOT, comprised of representatives from the transportation and agriculture industries, transportation safety representatives and the U.S. Department of Agriculture, to develop guidelines on reforming the ELD and HOS rules."

Within 120 days of receiving the working group's report, Chao will have to propose regulatory changes to the HOS and ELD regulations, he says. The legislation would also delay enforcement of the ELD rule, until she formally proposes the required reforms.

As the discussion continues, producers can make their own voices heard by participating with their local associations. Syngenta reps are also informed sources for recommendations and advice, Wright says. "We have experts here," he says. "You should feel confident reaching out to your Syngenta rep if you have any questions." 🌱 STORY BY SUZANNE BOPP



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Total Package

Cutting-edge technology and standard-setting tests make Syngenta packaging uniquely superior.

The first indication of product quality any customer sees is packaging. It shows how a product has handled the rigors of shipping and how much the manufacturer cares about providing quality from conceptualization to end use.

“When you receive a product in a quality package, it makes you feel that what’s inside is going to perform well,” says Eric Hoene, a branch manager for Premier Ag in Seymour, Indiana. “I believe Syngenta takes pride not only in the products it sells, but also in the appearance and durability of the packages that contain those products.”

Syngenta follows a customer-first approach when it comes to developing its packaging, always keeping growers’ and resellers’ safety and convenience top of mind. Its investment in this area is a testament to that commitment. “Syngenta remains among the only ag chemical companies in the U.S. with an in-house packaging test lab, and we believe ours is by far the most advanced,” says Fábio Gimenes, the formulation and packaging engineering head of Syngenta in North America. “Our full-service

process sets the industry standard and ensures customers get the best packaging available in the industry.”

Certified and Ready

The Syngenta lab isn’t only one of a few in the industry. It also has full approval from the U.S. Department of Transportation (USDOT) and the International Safe Transit Association (ISTA) to self-UN (United Nations) certify packaging. These endorsements mean Syngenta engineers are licensed to approve packaging for products themselves. As a result, the company can produce higher quality products for its customers, Gimenes says, since engineers can continuously work on refinements and improvements, instead of waiting for an outside firm to complete a separate certification process.

With the USDOT and ISTA certifications in hand, Syngenta runs a full spectrum of individual assessments. These include tests for enduring the traumas that are part of the real-life shipping process, such as:



Syngenta Packaging Engineer Marc Perry (left) and 3D Printing Specialist Kal Edly (right) inspect a model of a jug created from one of the four 3D printers at Syngenta in Greensboro, North Carolina.

- Drop tests to establish the height from which a package can fall without breaking, by using platforms that are quickly pulled away to replicate sudden drops;
- Compression tests, which simulate stacking packages on top of each other, as in a warehouse, by measuring a package's response to constant pressure from a machine in the lab; and
- Horizontal impact tests, which use lab devices to gauge how well packages can withstand such horizontal impacts as rail car coupling, rough forklift handling and truck docking.

“Syngenta remains among the only ag chemical companies in the U.S. with an in-house packaging test lab, and we believe ours is by far the most advanced.”

— FÁBIO GIMENES
Syngenta Formulation and Packaging Engineering Head

The lab also has equipment for advanced vibration tests beyond what most test labs can do, according to Josh House, packaging test specialist at Syngenta. “There are specific tests we run for transport by truck, rail, air and ocean,” he says. “With random vibration profiles, we simulate a package’s experience on a plane or inside an ocean shipping container. This allows us to go deeper than results we would get from a standard shaker-table.”

On the Cutting Edge

The technology in the testing lab can actually speed up the manufacturing process, since high-quality packaging that the manufacturing plants need to contain products is more readily available. Among the most important pieces of equipment that increase speed and efficiency are the lab’s 3D printers. These printers allow Syngenta to reduce the need for third-party designers and fabricators. By keeping even more of the process in-house, engineers can design and produce physical testing models within days, instead of weeks or months.

This technology has substantial benefits for growers who use Syngenta products, according to Kal Edly, Syngenta 3D printing specialist. “We’re able to give end users tailored features, based on their feedback, that may have previously been cost prohibitive,” he says. “Since we’re able to produce prototypes more cost efficiently, we can quickly make changes and hone in on the exact features that customers want.”

Other technologies also play important roles in the testing process. Slow-motion cameras, for example, allow enhanced analysis of test results. The lab’s cameras also use a machine learning program, which improves their accuracy when checking package labels for errors mechanically. In the 25 years since the lab opened, new equipment has also expanded the lab’s capability to test seed bags and drums.



In the forefront, Fábio Gimenes, head of formulation and packaging engineering at Syngenta, North America, gathers in the company’s in-house packaging test lab with (front row) Gabriel Oxby, formulation and packaging group leader, and other members of his team, including (middle row) Solomon Oppong-Agyuare, Xuebing Zhang, Andrew Johnson, Travis Varibrook, (back row) Jason Monsees, Josh House, Wallie Meisner, Marc Perry, Julian Gregory and Kal Edly.

The battery of tests and innovations that go into the Syngenta packaging process means better end products and happier customers. “When I receive a shipment from Syngenta, I know that I’m getting a quality product in a package that will meet my needs and the needs of growers in my area,” Hoene says.


Sustainable and Strong

Superior packaging uses plastics and other materials sustainably. For instance, Syngenta packaging incorporates protection against ultraviolet radiation, which can degrade product quality.

To improve sustainability across its supply chain, Syngenta recently announced a \$2 billion investment in sustainable agriculture. Part of this investment will go toward packaging innovations.

“Things like reducing the weight of plastic in containers, moving plastics and products in bulk, and cutting the thickness of our label paper all contribute to making our operations more sustainable,” says Gabriel Oxby, Syngenta formulation and packaging group leader.

Syngenta hopes that these and other sustainability efforts will help the company meet its target to reduce the carbon intensity of its operations and supply chain by 50% by 2030.

“From lab to field, we help make sure our products arrive to our customers intact and on time, ready to go to work,” Oxby says.  STORY BY JACK DAE HAN MILLER



Ripple Effect

Syngenta honors the winners of the 2019 Syngenta scholarships and the Farm Manager of the Year award. The company is named one of the top biotech employers for the 10th time in an annual global survey.

SPONSORSHIPS

Syngenta Named Top Agriculture Employer

The 2019 *Science Careers* Top Employers Survey has recognized Syngenta as one of the world's leading biotech employers — and the top agriculture employer. The company ranked 10th out of the 20 top employers in biotechnology, biopharmaceutical, pharmaceutical and related industries, marking the 10th year of recognition by the prestigious global survey.

The annual survey identifies companies with the best reputations as employers, based on 23 attributes. Treating employees with respect, being socially responsible and being an innovative leader in the industry were among the characteristics survey participants cited as strengths of Syngenta.

“One of our greatest strengths is the collaborative culture at Syngenta,” says Gusui Wu, head of seeds research at Syngenta. “Collaboration is essential for delivering on our commitment to accelerate innovation to bring growers the products and services they need. We are very proud of our dedicated scientists and researchers, who are committed to our ambition to help farmers safely and sustainably feed our planet.”



At the Syngenta seed research facility in Slater, Iowa, Tyler Dubai, Syngenta seed production research scientist, counts seeds out kernel by kernel and packages them into individual planting packets that will be used in specialized research planters.



Lawain Biermann Named 2019 Farm Manager of the Year

For Lawain Biermann, a strong agronomic background combined with four generations of family-owned farming has been the perfect recipe for a successful career in farm management. His industry knowledge, strong attention to detail and noticeable passion for his job are qualities that recently earned him the 2019 Farm Manager of the Year honor. This annual award — co-sponsored by Syngenta, Farm Journal's *AgPro* magazine, and the American Society of Farm Managers and Rural Appraisers — recognizes farm managers who display excellence in client service and a commitment to agriculture.

Working as a farm manager at Hertz Farm Management in Cedar Falls, Iowa, Biermann is widely recognized as a trustworthy leader who not only gets the job done but also takes the time to educate.

"Working with Lawain makes our jobs a lot easier because of his vast knowledge in agriculture," says Justin Weber, who has worked with Biermann at Hertz for 25 years. "I ask him a lot of agronomy questions, and he's always there with a quick reply."

As many of Biermann's farms get ready to transfer ownership to the next generation, he's already approaching this transition with the same determination he's given the rest of his career.

"I know it can be challenging to work through a transition, but I'm excited to have an opportunity to help navigate the process," he says.

To read more about Biermann's story and view a video about his dedication to the industry, visit www.syngentathrive.com/community. The video is also available at www.farmmanageroftheyear.com.



Lawain Biermann with Hertz Farm Management in Cedar Falls, Iowa, is the 2019 Farm Manager of the Year.



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Urban Roots

The Accelerating a Generation Syngenta Scholarship winners discovered their passion for agriculture in an unlikely place — urban America.

The two national winners of the 2019 Accelerating a Generation (AG) Syngenta Scholarship prove that growing up on a farm isn't always a prerequisite for pursuing a career in ag. Instead of experiences in rural communities, their inspirations were the National FFA Organization (FFA) and Norm Borlaug, the American plant pathologist and geneticist.

For bachelor's-level scholarship winner Adrienne Blakey, her participation in FFA — especially her engagement in public speaking events — “fueled an unquenchable interest in plant biotechnology and opportunities to learn from industry leaders I interviewed.”

For master's-level scholarship winner Nick Lord, Borlaug's efforts to dramatically increase worldwide food production made a lasting impression on him when he first

learned about them in his Advanced Placement biology class. Borlaug received the Nobel Prize for his work in 1970. “This highlighted the power of genetics and, more importantly, its potential to make an impact,” Lord says.

Blakey and Lord wrote about these important career influences in their essays for this year's AG Syngenta Scholarship program.

Blakey is currently pursuing a degree in plant and soil sciences and agricultural communications at Oklahoma State University in Stillwater, Oklahoma. While growing up, her immediate family moved frequently, but her grandparents operated their fourth-generation family farm. “I was a city girl who visited the farm every so often,” she says.

When her family eventually moved to the outskirts of a city closer to her grandparents, she joined the local FFA chapter and accepted leadership roles in local and state FFA organizations.

In his essay, Lord writes, “Having been raised in the suburbs of northern Virginia, I had very little exposure to agriculture growing up.” Lord is currently pursuing a degree in crop and soil science with a focus on soybean breeding at Virginia Polytechnic Institute and State University in Blacksburg, Virginia.

“Both Adrienne and Nick have inspiring stories of how they found their way into the world of agriculture,” says Vern Hawkins, regional director of Syngenta, North America. “I'm extremely impressed by their passion and perseverance in pursuit of their professional goals in this industry.”

As part of its AG Syngenta Scholarship program, Syngenta annually awards \$20,000 in scholarships to students pursuing bachelor's or master's degrees in crop-related disciplines. Blakey and Lord each received \$6,000 in awards as national prize winners and an additional \$1,000 as regional winners. Six more regional winners also earned \$1,000 scholarships.

For more information on the 2020 AG Syngenta Scholarship, visit www.syngenta-us.com/scholarships. 🌱

STORY BY LYNN GROOMS



Above: Nick Lord, the 2019 graduate-level recipient of the AG Syngenta Scholarship, works in a soybean breeding lab at the Virginia Polytechnic Institute in Blacksburg, Virginia.

Participating in the National FFA Organization propelled Adrienne Blakey to pursue a degree in plant and soil sciences and agricultural communications at Oklahoma State University, where she spends many hours in the Edmon Low Library shown here.



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