

Growing Together

»»»» 4Q | 2018

thrive[®]

Digital Growth

Integrated
Technology
Transforms
Farms

SEED TREATMENTS
HELP MAXIMIZE
YIELD

FUNGICIDE
LINEUP OFFERS
EXTENDED
CONTROL

syngenta[®]

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ON THE COVER Digital technology is setting the stage for a great leap forward in agriculture, which will result in higher yields and enhanced sustainability. Illustration: Dung Hoang

THIS PAGE Treated soybean seeds at the Seedcare Institute in Stanton, Minnesota, feature customized colors representing customer brands.
Photo: Tim Pearson



Even if you love your print edition of *Thrive*, you'll still want to 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.



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.



The Next Frontier

Agriculture is a dynamic industry, always building on its remarkable history to create a better path forward. Our shared past teaches us how mechanized farm equipment, breakthrough chemistries and advanced genetics have transformed how we grow the crops that feed the world.

Today, digital ag has the potential to forge a similar step change. That's because this next wave of agricultural innovation can help growers make better business and agronomic decisions, by looking at what data and science are telling them through an unbiased, fact-based lens.

At Syngenta, we're embracing digital ag and incorporating it into our portfolio of products and services. But our goal is not to disrupt what is working well for growers and channel partners like you. Instead, we want to encourage even more collaboration between you and your customers through the use of better, more seamlessly connected digital tools that will improve communication, insights and, ultimately, results.

As this issue of *Thrive* points out, Syngenta already has a strong digital-ag foundation in the U.S. through AgriEdge Excelsior®. For 15 years, growers enrolled in this whole-farm management program have had access to Land.db®, the cloud-based, record-keeping software exclusive to participants. These assets, along with our rich pipeline of digital tools, will help us support growers and you from the ground up by combining human know-how with data-driven technologies.

Of course, our relentless pursuit of new, yield-enhancing crop protection and seed solutions is having a positive effect as well. On the pages that follow, we'll unveil our latest fungicide and Seedcare offerings and explore how these game-changing assets may benefit a farm near you next season.

Looking a little further into the future, the long-term prospects for digital ag are extremely promising. As agriculture's newest frontier, it has the potential to create "super growers" who can respond immediately to changes in their fields in a very efficient, timely way. Together with their advisers, these growers will be able to produce higher-yielding crops more profitably with less impact on the environment. But we're only just beginning to understand the possibilities. Most of the transformation lies ahead of us.

As the 2018 season comes to a close, digital ag is paving the way for a better tomorrow. And, we at Syngenta are working hard to help deliver this brighter, more sustainable future to you. 🌱



MARCOS CASTRO
Business Development Manager
Global Digital Ag, Syngenta



MARCOS CASTRO

"This next wave of agricultural innovation can help growers make better business and agronomic decisions, by looking at what data and science are telling them through an unbiased, fact-based lens."



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



What's in Store

Be in the know about innovative new products, the latest news and upcoming events.

NEW PRODUCTS

Vibrance Trio Registered in Soybeans

Syngenta has received registration of Vibrance® Trio seed treatment from the U.S. Environmental Protection Agency. This premix of three fungicide active ingredients—mefenoxam, fludioxonil and sedaxane, all developed by Syngenta specifically for its Seedcare portfolio—is recommended for soybean growers whose main early-season concerns are strong stands and enhanced disease protection.

“The higher rate of mefenoxam in Vibrance Trio offers the highest level of *Phytophthora* and *Pythium* protection available,” says Steve Gomme, Seedcare product lead at Syngenta. “This gives growers confidence that when they plant early in unpredictable conditions, they can establish stronger soybean stands and reduce the risk of replanting.”





A stand of healthy corn grows in Hereford, Texas.

Regardless of planting conditions, Vibrance Trio helps provide protection from the following early-season soybean diseases:

- > *Phytophthora*
- > *Rhizoctonia*
- > *Pythium*
- > *Fusarium*
- > Seedborne *Phomopsis*
- > Seedborne *Sclerotinia*

In addition to its activity on root-damaging diseases like *Rhizoctonia*, the sedaxane in Vibrance Trio offers RootingPower, which creates healthier, more robust roots to help produce better, more consistent yields. Stronger roots also enable soybeans to better withstand environmental stresses, such as excessive heat or limited rainfall.

For more information, visit www.syngenta-us.com/seed-treatment/vibrance-trio.



Syngenta Adds Vibrance Cinco to Its Strong Seedcare Lineup

Vibrance® Cinco fungicide seed treatment has received registration approval from the U.S. Environmental Protection Agency for use on corn to guard against the most damaging seedborne and soilborne diseases, including *Pythium*, *Rhizoctonia* and *Fusarium*.

“Vibrance Cinco contains five powerful fungicidal active ingredients and five modes of action in a single jug, providing the most consistent and comprehensive seed-applied disease protection on the market today,” says Dale Ireland, Ph.D., Seedcare technical product lead at Syngenta.

Independent trials show Vibrance Cinco consistently outyields commercial standards by 2 bushels per acre (bu/A), which increases to 6.7 bu/A under heavy disease pressure.*

FIVE ACTIVE INGREDIENTS IN VIBRANCE CINCO

A.I.	Sedaxane	Thiabendazole	Azoxystrobin	Fludioxonil	Mefenoxam
FRAC GROUP	7	1	11	12	4
PYTHIUM	○	○	☑	○	☑
RHIZOCTONIA	☑	☑	☑	☑	○
FUSARIUM	○	☑	○	☑	○

☑ = Excellent ☑ = Good ☑ = Poor ○ = None

WHAT'S *in* STORE

“This bolt-on yield enhancement is a result of the product’s powerful disease protection, which leads to maximum root development, emergence, stand establishment and aboveground plant development,” Ireland says. “If you’re interested in maximizing your hybrid’s potential with Vibrance Cinco, let your seed dealer know, since seed companies are ultimately the ones that decide which seed treatments to apply to their corn seed.”

For more information about Vibrance Cinco, visit www.syngenta-us.com/seed-treatment/vibrance-cinco.

*Based on Syngenta internal and third-party data: n = 107 trials, $\alpha = 0.10$.



Force 6.5G Registered

As the trend toward high-speed planting continues to grow, Syngenta is expanding its insecticide portfolio to meet the needs of growers by introducing Force® 6.5G insecticide. Available for the 2019 growing season, this new, high-load granular corn insecticide will help growers achieve faster, more efficient planting with less hassle.

One bag of Force 6.5G is 20 percent lighter and treats 175 percent more acres than Force 3G, while still delivering the same superior control of corn rootworm and other early-season pests. Growers can apply Force 6.5G through a wide variety of existing, open-system granular application equipment, plus it will have a 50 percent lower dust-off rate compared with Force 3G.

For more information, visit www.syngentaus.com/Force6.5G.



NEWS AND EVENTS

Celebrating Pollinator Stewards

In June 2018, a three-person Syngenta team embarked on a 1,716-mile road trip up the Monarch Highway (Interstate 35) to commemorate National Pollinator Week. In five days, the team visited 12 cities and met with 14 pollinator experts, including researchers, conservationists, highway vegetation management specialists, golf course superintendents, entomologists, agronomists and farmers.

“Highlighting the ways various individuals and organizations are helping pollinators thrive was the primary goal of this road trip,” says Caydee Savinelli, Ph.D., pollinator and IPM stewardship lead at Syngenta. “Pollinator health and stewardship are important to agriculture and Syngenta, and our Operation Pollinator program is making a positive impact.”

But, Savinelli notes, caring for pollinators is much larger than any one company. “Improving pollinator health and



SEE MORE PHOTOS AND VIDEO.
www.syngentathrive.com (Under “Current News & Events”)

General Grant, the resident turf dog at Firekeeper Golf Course in Mayetta, Kansas, enjoys the wildflowers almost as much as the pollinators do.



practicing good stewardship take the combined effort, support and expertise of multiple stakeholders,” she says.

To see highlights from the road trip, visit www.syngentathrive.com/community.

UPCOMING TRADE SHOWS

Over the next few months, we'll be visiting trade shows across the country to give you an opportunity to preview our 2019 lineup of products and services. Some of the key events that Syngenta representatives will be attending are listed below.

OCTOBER 2018

- | | |
|-----------|--|
| 24–27 | National FFA Convention & Expo,
Indianapolis, Indiana |
| 29–Nov. 2 | American Society of Farm Managers and Rural Appraisers (ASFMRA) Annual Conference,
Chandler, Arizona |

NOVEMBER 2018

- | | |
|-------|--|
| 7–9 | National Association of Farm Broadcasters Trade Talk, Kansas City, Missouri |
| 27–29 | Agricultural Retailers Association (ARA) Conference & Expo, Boca Raton, Florida |

DECEMBER 2018

- | | |
|-----|---|
| 3–6 | National Association of Aerial Applicators (NAAA) Annual Convention & Exposition, Reno, Nevada |
| 3–6 | American Seed Trade Association (ASTA) CSS & Seed Expo, Chicago, Illinois |

JANUARY 2019

- | | |
|------|--|
| 8–11 | National No-Tillage Conference, Indianapolis, Indiana |
| 9–10 | Potato Expo, Austin, Texas |

A Better NK Seeds Experience

One year after announcing a comprehensive, long-term financial commitment to the NK® seed brand, Syngenta is bucking the trend of industry consolidation and reporting significant growth across the NK organization—from the lab to the field.

- The combined NK sales and agronomy team is tripling in size.
- The number of U.S. plant breeders is increasing by 50 percent and product trials by 30 percent.
- The number of new corn chassis is going up by 58 percent.

“Our mission is simple: to help farmers have their most profitable seasons yet through innovation,” says Quinn Showalter, head of NK sales. “We haven’t slowed down, and we don’t plan to.”

For more information about NK, visit www.nk.com.

Making Global Gains in Agriculture

The world's population is rapidly expanding, which means there is a critical need for agriculture to increase food production substantially, rapidly and sustainably. To address this challenge, Syngenta is making major advances through The Good Growth Plan, which began in 2015 with a commitment to make dramatic improvements in six areas of agriculture by 2020. The results from 2017 demonstrate significant progress toward achieving—and sometimes exceeding—those goals. These improvements are already having a meaningful impact on food production practices across the globe.



Make crops more efficient

GOAL

Increase the average productivity of the world's major crops by **20 percent** without using more land, water or inputs.

GLOBAL RESULTS

10.9

PERCENT

average land productivity increase

NORTH AMERICAN RESULTS

9.9

PERCENT

productivity boost on reference farms

A KEY ACHIEVEMENT



Greenhouse gas emission efficiency improved by **14 percent**



Rescue more farmland

GOAL

Improve the fertility of more than **24 million acres** of farmland on the brink of degradation.

GLOBAL RESULTS

18.5

MILLION ACRES

of benefited farmland

NORTH AMERICAN RESULTS

350,000

FARM ACRES

with improved soil health

A KEY ACHIEVEMENT



Increased benefited acres by more than **70 percent**



Help biodiversity flourish

GOAL

Enhance biodiversity on more than **12 million acres** of farmland.

GLOBAL RESULTS

13.8

MILLION BENEFITED ACRES

through 229 projects in 37 countries

NORTH AMERICAN RESULTS

1.8

MILLION ACRES

benefited from biodiversity efforts.

A KEY ACHIEVEMENT



Exceeded 2020 target for benefited acreage



Empower smallholders

GOAL

Reach **20 million smallholders** and enable them to increase productivity by 50 percent.*

GLOBAL RESULTS

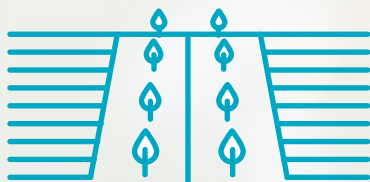
13.9

MILLION
smallholders reached

A KEY ACHIEVEMENT

21.6

PERCENT
of increased
land productivity
on smallholder
reference farms



* Goal doesn't apply to North America.



Help people stay safe

GOAL

Train **20 million farm workers** on labor safety.

GLOBAL RESULTS

25.5

MILLION
people trained on safe use

NORTH AMERICAN RESULTS

10,500

INDIVIDUALS TRAINED
including growers, farm youth, and pest control, turf and seed treatment professionals on safe-use practices

A KEY ACHIEVEMENT



Exceeded 2020 target by more than **25 percent**



Look after every worker

GOAL

Strive for **fair labor conditions** throughout the entire supply chain network.

GLOBAL RESULTS

86

PERCENT of Syngenta suppliers included in fair labor programs

NORTH AMERICAN RESULTS

2018

SYNGENTA NORTH AMERICAN
Fair Labor commitment implemented in the North American supply chain in 2018

A KEY ACHIEVEMENT



9 new countries added to the Syngenta Fair Labor Program



Cultivating Connections

Social media is expected to become an increasingly important means of communication for resellers and growers.

Among the massive equipment 41-year-old Donny Lassiter relies on to run his Creeksville, North Carolina, farm, one of his most trusted tools fits in the palm of his hand. Lassiter carries his smartphone with him almost everywhere he goes, whether he's driving the tractor in his cotton field or sitting on the couch reading the day's news.

"I need my phone with me to keep track of the business of the day and to multitask," he says. Besides his Excel spreadsheets and weather and news apps, two social media apps—Twitter and Snapchat—command his attention several times a day.

According to a recent study by *Successful Farming*, Lassiter is not alone. About 70 percent of growers use tools like Twitter, Snapchat, Facebook, YouTube and Instagram daily, not only to stay connected with friends and family, but also to obtain general news and information that can help them improve their farming operations.

As the number of Syngenta growers and resellers who rely on social media climbs, so, too, do the opportunities for meaningful dialogue. To make the most of these information-sharing platforms, Wendell Calhoun, communications manager at Syngenta, offers users valuable advice: Keep it immediate, keep it current and keep it relevant.

"Say a retailer walks across a peanut field and snaps a photo of a disease he's seeing. Then he posts it to Twitter with a note about what to watch out for. I'll see it as soon as I update my Twitter feed."

—DONNY LASSITER

Farming From Your Fingertips

"During planting and harvesting season, spare time just doesn't exist—and that goes for both growers and resellers," Calhoun says. "They are intensely busy and often-times find it difficult to physically connect with one another during these times."

Likewise, resellers work tirelessly to provide their growers with products and information needed to ensure a successful crop. "Customer service is a top priority for resellers, so effectively communicating with multiple growers about locally relevant matters during busy times can be challenging," Calhoun adds.

For many of those growers and resellers, social media is a key solution. "When you have your phone, tablet or internet access in your cab, as most growers do, you can get immediate information," Calhoun says. "We use it to help educate growers on local best practices and as a channel for us to better understand their challenges and to answer their questions in real time."

Lassiter likes Twitter because it's direct and to the point. "Not too much information, not a lot of filler," he says. Because tweets must be kept to 280 or fewer characters, messages have to be concise. "Say a retailer walks across a peanut field and snaps a photo of a disease he's seeing. Then he posts it to Twitter with a

note about what to watch out for," Lassiter says. "I'll see it as soon as I update my Twitter feed."

Emily Daniels, global digital engagement manager at Syngenta, says the company's guidelines for global and local social media sharing are based on being open and engaging directly. "Direct communication is refreshing and keeps the conversation current," she says. "We see people reaching out, to ask questions about products or get application advice or contact information for local teams. It's our aim to help immediately in real time."

Connecting With Growers

When considering the best platforms for communicating with growers and resellers, Calhoun says Syngenta balances a knowledge of the social media tools that are available with an awareness of the tools that are actually being used. "We have to challenge ourselves to separate what is cool from what is useful."

While research shows most growers feel more comfortable using traditional social media platforms, such as Facebook and YouTube, Calhoun says Syngenta always has an eye to the future. After examining rising trends, like voice technology and augmented reality, the company typically launches pilot programs to learn more about growers' preferred channels.

As the appetite for a particular channel grows, Syngenta grows its footprint there. "At the same time, we haven't walked away from print, radio or TV," Calhoun says. "Growers are not walking away from any particular medium, but they are adopting new ones."

Whether growers consume information via Facebook, YouTube or magazine articles, engaging content matters just as much as the platform itself, says Caryn Caratelli, senior vice president at G&S Business Communications, the agency partner that assists Syngenta with its marketing strategy.

Through one of its virtual reality pilots, for example, growers unable to attend a Syngenta Grow More™ Experience field day event were virtually transported to an Illinois field to see how a Syngenta herbicide protected against an invasive weed.

"That's a telling story that gives customers a full view of product performance, which helps them make informed decisions," Caratelli says.

How can resellers best communicate with their customers? How can growers best connect with their followers? Caratelli offers a one-word answer: variety. "Use a content mix that includes relevant photos, illustrations, videos, live videos and text-only content, like the quick messages we send on Twitter," she advises.

"At the end of the day, people are excited to share their own photos and videos with other people," says Daniels, who loves it when a grower posts a message alongside a selfie in real time. "It can be something as simple as, 'Hey, just getting started today,' accompanied by a beautiful photo of his or her field. When we use social media correctly, it's not about us telling our story. It's about growers and resellers telling theirs." 🍀

STORY BY ROBIN SUTTON ANDERS

Bringing the field to your fingertips

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www.Syngenta-US.com/social.



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Seed Stewards

Industry experts agree that properly stewarding seed treatments is a shared responsibility.

Q. Why is seed treatment stewardship so important?

A. Jane DeMarchi, vice president of government and regulatory affairs,

American Seed Trade Association (ASTA): The use of seed treatment technologies by farmers is an effective tool to provide the necessary protection of seed for a strong, healthy start. But it is essential that those who treat, handle, transport and plant treated

seeds manage them properly and in accordance with label instructions to minimize the risk of pesticide exposure to nontarget organisms.

A. Ravi Ramachandran, Ph.D., head of the North America Seedcare Institute,

Syngenta: A focus on stewardship helps improve the safety and efficiency of the overall seed treatment process, while enabling delivery of high-quality treated seed. Implementing stewardship best practices minimizes the risk of product exposure for all personnel in the seed-supply chain.

“It is essential that those who treat, handle, transport and plant treated seeds manage them properly and in accordance with label instructions to minimize the risk of pesticide exposure to nontarget organisms.”

—JANE DEMARCHI

Q. What is your organization doing to help resolve the challenges?

A. DeMarchi: The Environmental Protection Agency is relying on the seed industry to take a proactive role in communicating specific recommendations for seed treatment stewardship. ASTA has developed guides, videos and other educational resources that applicators and growers can find on our website, www.betterseed.org, under “Resources.”

Through these resources and in collaboration with partners, including CropLife America, Agricultural Retailers Association, National Corn Growers Association and American Soybean Association, we’re reminding growers to follow the five basic steps of stewardship:

1. Follow directions on treated-seed-container labeling for handling, storage, planting and disposal practices.
2. Eliminate weeds in and around the field prior to planting.
3. Minimize dust.
4. Be aware of pollinator populations.
5. Clean and remove treated seed from equipment and dispose of it properly. to help keep it out of commodity grain channels.

ASTA looks at stewardship from the full life cycle of the product—from the storage of seed treatment products all the way to the final disposal by the grower. And we’re getting the word out through public service announcements on farm broadcasting networks, social media channels and in-person meetings. We urge all seed companies and seed retailers to join us in communicating just how important seed treatment stewardship is to their companies, their customers and their communities.

A. Ramachandran: Syngenta has embedded stewardship in all aspects of a product’s life cycle. For more than three decades, Syngenta Seedcare has been a leader in developing and implementing stewardship best practices. Our primary goal is to



JANE DEMARCHI
Vice President of
Government and Regulatory Affairs,
American Seed Trade Association

make sure our customers apply responsible and ethical management when using seed-applied technologies to derive maximum agronomic benefit at the farm level.

The Seedcare Institute in Stanton, Minnesota, is integral in helping us deliver the Seedcare value offer, P.A.S., which stands for products, application and services. With the P.A.S. approach, we not only provide an industry-leading product portfolio, we also give in-depth application advice and in-season service support. (See “Going Beyond Seed Protection,” page 22.)

As part of our service offer, we put great emphasis on education and training. In 2017 alone, our experts in Stanton trained more than 1,500 customers. Through the training, participants gain practical knowledge on:

- > Preparing an optimal crop-specific treatment recipe for growers
- > Interpreting product labels and safety data sheets
- > Selecting and properly using personal protective equipment
- > Following best practices on how to store and dispose of products and treated seed, and how to recycle product containers

Additionally, we collaborate with major equipment technology providers to train our customers on the latest application technology. This training emphasizes how to apply, service and calibrate equipment, so customers can deliver the right dose of seed treatment that stays on the seed.

Q. From a stewardship perspective, what should growers look for when selecting a seed treatment applicator and treated seed products?

- A. DeMarchi:** Growers should make sure that applicators have the necessary equipment, knowledge and training to deliver high-quality treated seed. This includes starting with quality seed and then properly cleaning it to maximize adherence of the seed treatment. Company personnel should be well-versed on the compatibility of the component parts of recipes that they use. Overtreatment—the application of a second seed treatment recipe to previously treated seed—can impact the integrity of the original treatment. Therefore, we recommend a one-time application of all seed treatment products.
- A. Ramachandran:** With today’s tight margins, growers need to be confident that the seed they are planting will maximize crop yields, while minimizing disruption of their operation and impact on the environment. A good start is knowing what’s on their seed and who’s applying their seed treatment. Treatment applicators should be knowledgeable, trained and use properly calibrated equipment, so they can produce high-quality treated seed that contains the right dose of product. The treatment itself should have a sound agronomic package of active ingredients that stay on the seed through planting, with low dust-off and good seed flow to minimize planter buildup. Using the right treatment recipe that includes polymers can also minimize seed abrasion during the planting process.

It’s important to remember that stewardship is a shared responsibility from end-to-end of a seed supply chain, and everyone involved must play their part. At Syngenta, we are certainly happy to play ours and are here to help in any way possible. 🌱 INTERVIEWS BY SUSAN FISHER

“With today’s tight margins, growers need to be confident that the seed they are planting will maximize crop yields, while minimizing disruption of their operation and impact on the environment.”

—RAVI RAMACHANDRAN



RAVI RAMACHANDRAN, PH.D.
Head of the North America Seedcare Institute,
Syngenta

INTEGRATED



As the “internet of things” grows within the agriculture industry, digital technologies are revolutionizing ag production practices.

By Miriam Paulson

Illustrations by Dung Hoang

INNOVATION





fter a dry, underwhelming 2017 season, Joe Farmer took a very conservative approach this year, making risk-averse decisions, especially in terms of drought. His growing season was fine, but far from optimal.

Joe is hypothetical, but his plight is relatable. Had Joe been able to review data from the past 15 years or so, he would have seen that last year was an anomaly and may have taken more profitable risks.

“As humans, we make decisions based on our own biases and experiences—consciously or not,” says Marcos Castro, global digital ag business development manager at Syngenta. “With digital agriculture tools, growers can look at historical data, specific to their fields. That can help them have a broader view and make better decisions regarding overall operations, inputs, variability within a field, timing of applications and overall results.”

Technology for Farmers by Farmers

Even before digital agriculture was a hot topic in the industry, Syngenta established AgriEdge Excelsior®, the Syngenta whole-farm management program that helps growers enhance productivity in an unbiased way. For more than a decade, growers enrolled in the program have had access to Land.db®, the cloud-based data and record-keeping software developed by Ag Connections, a wholly owned subsidiary of Syngenta. AgriEdge Excelsior, powered by Land.db, is the foundation for the Syngenta Digital Agriculture Solutions suite of tools in the U.S.

“Before using Land.db, we would spend rainy days writing in legal pads, noting what we’d done so far,” says Heath Adkisson, owner of Farmers Farms in Osceola, Arkansas. “Now, each day my wife inputs data into Land.db, and it’s easy for us to stay on top of it.”

Growers are already seeing improved record-keeping tools through advances in farm equipment. But as the industry becomes more competitive, growers need a further edge that farm-management software can offer.

“It’s all about potential profitability—controlling expenses and outputting high yields,” Adkisson says. “Land.db allows me to know what I’ve spent on a field-by-field basis, or even by crop zone, so it helps me know what’s profitable and what’s not. I love the tools that help me control my inventory, by seeing what we’ve purchased and what we’ve applied.”

Building Connectivity

Despite the clear advantages that digital agriculture tools like farm-management software provide, the pace of adoption of new tools and technology has not always been as quick among growers.

“Technology is coming into the market at an extremely fast pace,” Castro says. “But agriculture has long cycles for evaluating products. It takes a full growing season or more to test out a certain technology. There are so many options and so much noise in the marketplace that it’s actually leading to decision paralysis.”

Even once growers select digital tools to incorporate into their operations, a lack of communication among the tools can lead to fragmented analyses and lower data quality.

“Data entry can be time-consuming and take growers away from other things that they want or need to do,” says Jeremy York, training lead at Ag Connections. “So, we’re focusing on developing automation tools that will lead to improved accuracy and will give the grower more time to make decisions from the data. We want to make it easier for these more advanced pieces of farm equipment to ‘talk’ directly to our software.”

Ag Connections’ goal is to build this connectivity beyond equipment and Land.db. York notes that the team is working with retailers and resellers to integrate existing technologies these partners are already using for a free flow of data.

“The integrations we’re working on over the next year or two will be big,” says Allen Besand, technical lead at Ag Connections. “We’re focused on continuing to work with other companies and growing our list of integrations to offer tools with high business impact for growers, but also for their advisers. We want to make it easier for resellers and other partners to help their customers.”

DEDICATED SUPPORT AND SERVICE

Agriculture advances in waves with corresponding yield jumps. In recent decades, the industry experienced the shift from manual to mechanized equipment, the introduction of powerful chemical innovations, and the launch of genetically modified seeds and traits. The next yield catalyst will be combining agronomics with technology, but many growers may need help operating the software that is driving these advancements.

“A lot of growers claim they aren’t computer savvy, so there’s a fear factor around farm-management software,” says Greg Reynolds,

support manager for Ag Connections, a wholly owned subsidiary of Syngenta. Reynolds leads a team of 10 employees who help alleviate any concerns around using Land.db®, the exclusive software for the AgriEdge Excelsior® whole-farm management program.

“Our goal is to make the grower’s experience the best it can be,” he says.

Unlike many call centers, the support team at Ag Connections doesn’t have a certain quota, meaning they can spend as long as necessary on each call. Most of the calls the team receives are tutorial-based

Start to Finish

By implementing and integrating the right applications, the Syngenta Digital Agriculture Solutions team aims to build a digital agronomy toolbox that provides a seamless experience from planning to harvest.

AgriEdge Excelsior already incorporates several elements to help the grower throughout the season:

- > **During planning**, growers can analyze the previous year's data at a subfield level to determine how they can be more sustainable and profitable, with the benefit of custom-crop forecasts based on historical data. Growers can share plans directly with their advisers, who, in turn, can provide product recommendations.
- > **Once the crop is in the field**, growers can use digital tools to stay ahead of potential threats. Using the recently acquired FarmShots™ satellite imagery, growers can locate potential problems. Robust software analytics identify the specific cause, and the grower's adviser can send a recommended agronomic solution.
- > **When a plan of action is put into place**, purchases or applications are recorded into Land.db for record keeping, data analytics and regulatory reporting.
- > **At harvest, growers** see historical data at a field level. By looking at live local prices, along with the historical data, growers can measure the overall potential profitability. (See "A Matter of Timing," page 26.) The data can be instantly sent to Land.db to be used in next season's planning.

"Retailers, resellers and agronomists will play a critical role in the future of digital agriculture," says Aaron Deardorff, head of digital agriculture solutions at Syngenta. "Digital agriculture is revolutionizing and will continue to revolutionize the way they scout, recommend products and communicate with their customers. Growers' confidence in their advisers will continue to increase, as they see the results backed up by data evidence."

about specific software capabilities.

"We aim to help growers use the software to its full capability, so we talk them through steps they may not have gotten to or thought of yet," Reynolds says.

This strategy is working. Positive responses on the team's customer feedback survey are above the 90th percentile.

"Our service is meant to make growers' lives easier and more efficient," Reynolds says. "So, I say, 'Just pick up the phone and call us.' We'll happily walk you through any question you may have."

The Next Big Thing

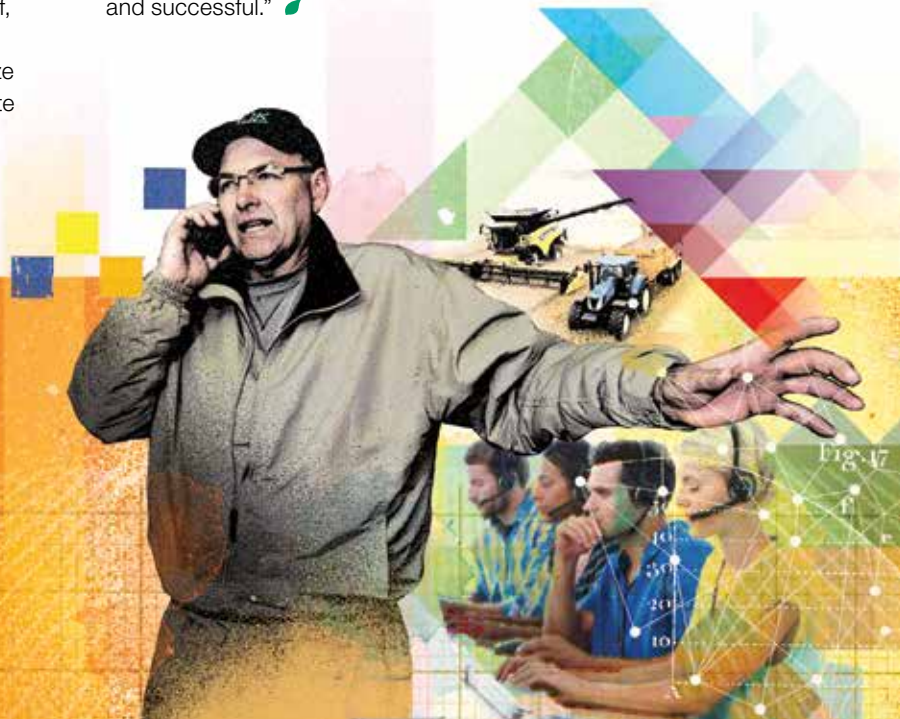
According to Castro, Syngenta is already looking to bring the next tool to market that will bolster advisers' digital experiences with their grower customers. "In the coming months and years, our customers and partners have a lot to look forward to that will build on our farm-management system," he says. "We're not introducing super futuristic technology. Rather, we're taking pragmatic steps in selecting projects that will help growers have a comprehensive digital experience and deliver high value to them."

One existing project is focused on codifying agronomy. According to Castro, this in-development tool will help growers and their advisers identify, quantify and mitigate problems discovered during scouting. Using artificial intelligence for imagery recognition, this tool could increase the ability of agronomists to assist more customers in a shorter period of time, by reducing the need for in-field visits.

A recently introduced tool helps better place the strong genetics of Syngenta seeds in fields. This software evaluates soil types, weather patterns and grower practices to help seed dealers give recommendations for the best seeds to plant, using a scientific approach that avoids biases.

Deardorff emphasizes the Syngenta team is focused on building integrations into the Digital Agriculture Solutions suite of tools that will add connectivity and make sense for a U.S. audience.

"We're looking at all solutions through a retailer lens," Deardorff says. "We want to build value for our retailers and their growers. In addition to our industry-leading products, we want to provide tools that will help their businesses be more productive and successful." 🌱



A WINNING ROSTER

Following three record-breaking seasons with Trivapro fungicide, Syngenta goes all-in on disease control, adding Miravis fungicide to its 2019 lineup. | *By Melissa Curtin*

Year in and year out, professional athletic clubs spend millions of dollars looking for just the right talent to add to their lineups, fill skill gaps and win more games. Much like the athletic scouting process, Syngenta researchers are on a quest to find just the right tools to more effectively fight disease and, ultimately, help growers achieve higher returns. To that end, Syngenta has introduced two game-changing fungicide molecules for the row-crop market in the last three years—Solatenol® fungicide and most recently, Adepidyn® fungicide.

Not All SDHIs Are Created Equal

While both Solatenol and Adepidyn fungicides fit into the carboxamide chemical class with an SDHI (succinate dehydrogenase inhibitor) mode-of-action chemistry, they have their own characteristics that set them apart from each other—and every other fungicide on the market.

“In laboratory and field tests, Solatenol and Adepidyn fungicides have proven to provide the best-of-the-best disease control and plant-health benefits of any fungicide available,” says Eric Tedford, Ph.D., Syngenta fungicide technical product lead. “In 2019, Adepidyn will be available in multiple custom-designed fungicides under the Miravis® brand to combat geospecific disease threats that growers face.”

Row-Crop Diseases Meet Their Match

New and shifting disease patterns as well as resistance continue to drive the need for innovative technology.

“We’ve put together a robust row-crop fungicide portfolio to allow growers to choose the formulation that fits their specific disease problems,” says Brett Johnson, Syngenta fungicide product lead. Knowing the strengths of each brand will be crucial to selecting the best fungicide for 2019.”

The Syngenta row-crop fungicide portfolio will include the following brands:

▼ TRIVAPRO FUNGICIDE

With first sales in 2016, Trivapro® quickly proved its ability to work harder and last longer to fight diseases and help improve plant health for higher yields, versus untreated acres and competitive brands. Powered by three active ingredients—azoxystrobin, propiconazole and Solatenol fungicides—Trivapro has set a new standard for residual disease control for rusts, blights and leaf spots in corn, soybeans and wheat.

“Over the last few years, Trivapro’s consistently long residual control and yield bump have impressed my customers and me,” says William “Bill” Ruzicka with Farmers Feed & Grain in Riceville, Iowa. “In our side-by-side trials where other brands have petered out late in the season, Trivapro keeps protecting crops, which makes it worth the investment.”

One of his customers who has seen these benefits firsthand is grower Mark Forsyth from Charles City, Iowa. “I’ve been using Trivapro for three years now to control Northern corn leaf blight and gray leaf spot,” he says. “We started off with one field, and now we treat all our acres with Trivapro, because of the consistent stay-green effect and yield bump of 10 to 15 bushels per acre, sometimes more, depending on the hybrid.”

While Trivapro controls many diseases, efficacy ratings from university corn fungicide trials rank its Southern rust control as excellent—an important distinction for growers who face Southern rust pressure. Over the last few years, University of Kentucky Plant Pathologist Carl Bradley, Ph.D., has observed yield losses caused by Southern rust in Kentucky cornfields. “We really don’t have any corn hybrids with complete resistance to Southern rust, so application of an effective fungicide is really the only current method of management for this disease,” he says.

Grower Mark Forsyth checks out a couple of ears of corn on his farm in Charles City, Iowa.



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Above: A healthy stand of corn flourishes on Mark Forsyth's Iowa farm. Below: Retailer William "Bill" Ruzicka (left) and grower Mark Forsyth (right) inspect a soybean plant on Forsyth's farm.



▼ MIRAVIS NEO FUNGICIDE

Similar to Trivapro, Miravis Neo will help corn and soybean producers combat disease by offering unmistakably superior control from three active ingredients: azoxystrobin, propiconazole and Adepidyn fungicides. Miravis Neo offers the most potent control of blights and leaf spots and will offer a new tool for white mold in soybeans.

Tedford notes that Miravis Neo has benefits beyond robust disease control. "In both lab and field tests evaluating crop stress responses, plants treated with Adepidyn have demonstrated more vigor," he says. "That means under stressful conditions—like drought or heat stress, or even under light disease pressure—Miravis Neo—treated plants can put all their energy toward yield."

Ruzicka, who had a chance to fieldtest the new technology this year, is looking forward to more widespread use of this exceptional product in 2019.

▼ MIRAVIS TOP FUNGICIDE

Engineered specifically with Southern soybean growers in mind, Miravis Top contains difenoconazole and Adepidyn fungicides. With two powerful active ingredients, Miravis Top enables growers to control diseases—including susceptible and strobilurin-resistant frogeye leaf spot, target spot and *Septoria* brown spot—while providing the plant-health benefits they expect.

"Unlike some of the older chemistries growers have used before, both modes of action in Miravis Top will be working to protect their yield from disease," says James Hadden, Ph.D., Syngenta fungicide technical product lead. "In our trials evaluating control of target spot, *Septoria* and strobilurin-resistant frogeye leaf spot, we've seen anywhere from a 3 to 5 bushel-per-acre yield increase with Miravis Top over competitive brands."

In addition to outstanding disease control, Miravis Top will help alleviate the growing threat of disease resistance, Bradley says. "We all know about strobilurin-resistant strains of the frogeye leaf spot fungus," he says, "and we have confirmed cases of strobilurin-resistant strains of the *Septoria* brown spot fungus. It's really only a matter of time before we find and document strobilurin-resistant strains of the target spot fungus, too."

Growers shouldn't overlook the importance of having a new active ingredient to help combat growing resistance challenges, Bradley adds. Currently, control of frogeye leaf spot is coming from the triazole component of most fungicide products, since the fungus has exhibited widespread resistance to strobilurin fungicides. This is making the triazoles do all the "heavy lifting" and sets up a scenario where resistance to triazole fungicides could eventually develop as well. Using new chemistries from different chemical classes will help sustain management of frogeye leaf spot with fungicides for a longer period of time.

▼ MIRAVIS ACE FUNGICIDE

Wheat growers have long battled *Fusarium* head scab (blight) with relatively few modes of action and constrained application flexibility. In 2019, that situation will change with the introduction of Miravis Ace.

Containing Adepidyn and propiconazole, Miravis Ace will not only be the first SDHI-containing product available for *Fusarium* head scab control, but it will also be the first new mode of action for the disease in many years. Field tests across the country—from North Dakota to Pennsylvania and Kentucky—demonstrate that Miravis Ace will enable wheat growers to have more flexibility to treat all their acres at the right time for better, more predictable results.

In field tests, Syngenta has demonstrated that Miravis Ace can be sprayed as early as 50 percent head emergence, without sacrificing efficacy or yield. And because it delivers excellent control of *Fusarium* head scab, Miravis Ace can help reduce levels of the profit-robbing mycotoxin deoxynivalenol, also known as DON or vomitoxin.



Wheat grows in a Crookston, Minnesota, field.

A Tailor-Made Portfolio

With the introduction of the Miravis brands, row-crop growers now have four potent fungicides to choose from to fight the specific diseases that threaten their crops, Johnson notes.

“Unlike the repackaging and rebranding of old technology we’re seeing in some products, these brands contain game-changing molecules,” he says. “Solatenol already has completely changed row-crop disease control and plant-health protection as we know it, and Adepidyn will soon follow suit. Once growers try these products, they won’t go back.” 🌱

NEW!

Adepidyn Formulations Available in Specialty and Vegetable Crops

In vegetable and specialty markets where disease control is critical to both yield and quality, the expanded 2019 Syngenta fungicide roster is especially welcome. Over the past three years, Syngenta has brought numerous formulations to vegetable and specialty crop growers, including Aprovia[®], Aprovia Top, Aprovia Ace, Elatus[®], Orondis[®] Gold¹, Orondis Opti and Orondis Ultra fungicides.

Most recently, the company added two Adepidyn[®] fungicide formulations to its specialty and vegetable crop portfolio:

➤ **Miravis[®] fungicide**—With field trials showing yield increases in peanuts of around 1,000 pounds over competitive spray programs and 2,000 pounds over untreated acres², Miravis will be a once-in-a-generation breakthrough in peanut leaf spot disease control.

Bob Kemerait, Ph.D., University of Georgia plant pathologist and extension specialist, explains his excitement about Miravis: “Miravis has two main advantages for peanut growers. First, it provides a new level of excellence for leaf spot control. And second, because it’s so potent, it enables flexibility in spray programs that should reduce the number of sprays and costs required for disease control.”

➤ **Miravis Prime fungicide**—A combination of fludioxonil and Adepidyn fungicides, Miravis Prime will bring new levels of control for economically challenging diseases in several specialty and vegetable crops, including *Botrytis* in grapes, early blight in potatoes and gummy stem blight in vegetables.

“As we’ve developed the Miravis brands in the U.S., what has stood out in hundreds of trials is how powerfully and consistently they perform, regardless of crop or geography,” says Steve Eury, fungicide product marketing lead at Syngenta. “It’s going to be very satisfying to show our customers what these new products can do for them.”

¹Orondis Gold is a combination of separately registered products: Orondis Gold 200 and Orondis Gold B.

²2016 trials, mean of 10 trials across Georgia, Alabama and Florida. The trials included three in-house trials, six university trials and one contract research trial.

What's On Your Seed?

To maximize yield potential, it's more important than ever for growers to know what's in the seed treatments that protect their seeds.

By Darcy Maulsby



Left: A Syngenta specialist handles treated soybean seeds with care at the Syngenta Seedcare Institute in Stanton, Minnesota. Top right: Jars of treated seeds are on display at the Seedcare Institute.



When it's time to buy a pickup truck, do you just buy the first thing the dealer shows you? Unlikely.

When it's time to take it easy, do you just grab the first beverage you see? Doubtful.

"Whether it's as small as a soft drink or as big as a truck, you usually don't just take whatever is offered," says Dale Ireland, Ph.D., technical product lead for Seedcare at Syngenta. "You have a brand in mind or want something specific to meet your needs. It's time to take this same approach with seed protection."

Steve Gomme, product lead for Seedcare at Syngenta, agrees and adds that as demand for seed treatments continues to rise, growers need to know what they're really buying.

"When we interact with growers at trade shows, I ask them what seed treatments are they using on their crops," he says. "Many growers don't know. They see color on the seed and assume the crop is protected."

But not all seed treatments are created equal, Ireland says. "Seed treatments are like cars. While a race car and a minivan might be painted the same color, the differences become clear when you put them to the test on the race track."

Part of putting seed treatments to the test and selecting the right one is asking the right questions, note Ireland and Gomme. Those questions are as follows:

1. What active ingredient or ingredients are included?

Some seed treatments may only contain one active ingredient, while others contain multiple active ingredients with more than one mode of action for broader protection and improved stewardship to address resistance issues.

2. What does the seed treatment protect against? While seed treatments can include fungicides and insecticides, there's more to producing top yields than just managing disease and insects. For example, soybean cyst nematode (SCN) remains the No. 1 yield robber in soybeans. "It's essential to ask whether your soybean seed treatments also protect against nematodes," Gomme says.

3. Who stands behind the seed treatment? It takes significant investments of time, money and expertise to develop proven, reliable seed treatments. "Also, make sure the company that supplies the technology provides service and support before, during and after the sale," Ireland says.

4. Does the seed treatment use the latest technology? "Older chemistries don't offer the many advantages of new technologies, which often have lower use rates and more

PIPELINE PREVIEW

powerful active ingredients, gram for gram,” Ireland says. You get what you pay for, he adds. “Even though older chemistries cost less, they might be the worst few dollars you spend, if you don’t get the protection your crop requires.”

5. What will return the best value to my acres? A good seed treatment won’t just prevent yield loss; it will boost yield potential, Gomme says. “All this puts more money back into your pocket.”

Syngenta Offers New Options

To provide growers with the latest technologies that can help them produce better quality, higher-yielding crops, Syngenta is adding more Seedcare innovations to its corn and soybean portfolios, including:

> **Vibrance® Trio** fungicide seed treatment. Developed primarily for soybeans, Vibrance Trio helps growers control early-season disease and boost root health for optimal water and nutrient uptake.

“This is our newest fungicide-only seed treatment for soybeans,” Gomme says. “It’s all about starting strong with healthy roots.”

Vibrance Trio contains the highest rate of mefenoxam, the active ingredient that protects against *Pythium* and *Phytophthora*. “In trials, we’ve seen 2.2- to 2.5-bushel-per-acre yield gains with Vibrance Trio, compared with a check treatment in heavy-disease environments,” says Gomme.¹

“Seed treatments are like cars. While a race car and a minivan might be painted the same color, the differences become clear when you put them to the test on the race track.”

—DALE IRELAND

Vibrance Trio, which received EPA registration this summer, is available for the 2019 planting season, with registration on pulse crops and legumes anticipated as well.

> **Vibrance Cinco** fungicide seed treatment. Specifically designed for corn, Vibrance Cinco contains five active ingredients and five modes of action in one premix, providing multiple effective modes of action against all major corn seed and seedling diseases:

- Sedaxane, which manages *Rhizoctonia* exceptionally well and delivers proven benefits from RootingPower, the link between strong roots and higher yield potential
- Fludioxonil, which delivers consistent, comprehensive protection against diseases, including *Rhizoctonia* and *Fusarium*
- Mefenoxam, the worldwide standard for *Pythium* protection
- Azoxystrobin, effective on seedborne and soilborne fungal diseases, while providing protection from *Pythium* and *Rhizoctonia*
- Thiabendazole, which provides robust *Fusarium spp* protection as well as *Rhizoctonia* activity

“Vibrance Cinco combines the RootingPower of Vibrance with the industry-leading disease protection of Maxim® Quattro seed treatment,” says Todd Edgington, product marketing lead for Seedcare at Syngenta. “The result is a convenient premix that layers five modes of action for more consistent performance, enhanced activity and greater resistance management.”

GOING BEYOND SEED PROTECTION

Proven active ingredients seem like the most important part of a seed treatment, but there are other practical considerations, too. Will the treatment dust off or stick to the seed? What’s the right polymer to use to make sure the treated seed flows easily through the farm machinery? How can multiple seed treatments be combined effectively on one seed?

These questions drive Ravi Ramachandran, Ph.D., head of the Syngenta North America Seedcare Institute, and his team.

“Providing proven seed treatments is like baking a delicious cake,” Ramachandran says. “You need a recipe, and you need to know how to combine the ingredients properly.”

The process starts in Stanton, Minnesota, at the North American Seedcare Institute, a \$20 million, state-of-the-art facility that opened in September 2016. “This is the most sophisticated technology center of its kind in the industry,” Ramachandran says. “Delivering value to our customers drives our three-pillar approach.”



Known as P.A.S., this three-pillar offer includes:

> **PRODUCTS.** Through lab-to-land testing, the Seedcare Institute team evaluates the compatibility of polymers, colorants and active ingredients. “Since Syngenta Seedcare incorporates fungicides, insecticides, nematicides, biologicals and micro-nutrients, we make sure the right components get on the seed and stay on the seed from treatment through planting,” Ramachandran says.

> **APPLICATION.** Product testing includes climate-simulation chambers that reflect growing conditions from the Carolinas to California. “We want to make sure that no matter where you plant, you’ll have a good experience with Syngenta Seedcare products,” Ramachandran says. “Our proprietary application testing also ensures a disruption-free application season at the retail treater locations.”

> **SERVICES.** Growers and retailers find the

Independent trials prove Vibrance Cinco, which is available for the 2019 planting season, consistently outyields commercial standards by 2 bushels per acre (bu/A), says Edgington.² He adds that, in trials with heavier disease pressure, the seed treatment produced a 6.7-bu/A yield benefit.³ This yield advantage results from the powerful disease protection Vibrance Cinco offers, which leads to maximum root development, emergence and stand establishment.

> **Vayantis**[®] fungicide seed treatment. Pending registration from the Environmental Protection Agency, this new, systemic fungicide seed treatment with a brand-new mode of action will protect corn and soybean seedlings from key diseases caused by oomycete plant pathogens. In corn, it is expected to offer the broadest spectrum of protection against *Pythium*, the No. 1 most destructive disease in the crop, across more species of the disease than any other product.

“Trials show that picarbutrazox, the active ingredient in Vayantis, will offer extremely robust protection against *Pythium* and *Phytophthora*—both important soybean seed and seedling diseases,” Ireland says. “Protecting crops from these diseases is critical, because once a seedling’s early growth and development are lost, they can never be regained.”

Vayantis belongs to the tetrazolyloximes chemical group of fungicides (FRAC code U17). It has no known cross-resistance and will broaden integrated-pest-management strategies, says Ireland, who adds that Syngenta anticipates registration in early 2020.

> **Saltro**[®] fungicide seed treatment. Also pending regulatory approval, Saltro is expected to protect from sudden death syndrome (SDS) and will be an important component in the management of nematode damage.

In trials with high-pressure SDS disease situations, Saltro has delivered a 3-bu/A or more soybean yield advantage, compared with ILeVO[®] seed treatment, Ireland notes.⁴ “Even in trials with low-disease-pressure situations, we still see a 1.5- to 2-bushel yield bump with Saltro,” he adds.⁵ Also, unlike ILeVO, Saltro in trials showed no signs of plant phytotoxicity, which causes a “halo effect” of chlorotic, damaged and stunted soybean plants.⁴

Saltro will contain Adepidyn[®], the Syngenta novel fungicide molecule with the succinate dehydrogenase inhibitor mode of action. “It’s easy on early plant growth and provides a new level of protection from *Fusarium*, which causes SDS,” Ireland adds. Syngenta anticipates first registrations of Saltro in the U.S. and Canada in 2019, followed by Australia in 2020.

Investing in innovation allows Syngenta to provide growers with proven seed treatment solutions. “We know times are tough and margins are tight,” Gomme says. “That’s why it’s essential to ask what’s on your seed. Focusing on return on investment, not just cost, helps you protect your seed investment and maximize your crop’s potential.” 🌱

1. Syngenta field trial (n = 15); 2011–2012, trial locations: NE, WI, MO, IA, MN, IL, IN, OH
2. Syngenta internal and third-party data (n = 107)
3. Syngenta internal and third-party data; *Rhizoctonia solani* trials (n = 29 trials)
4. Syngenta field trial data (n = 12); 2015–2017
5. Syngenta field trial data (n = 26); 2015–2017

seed-protection answers they need at the Seedcare Institute. Every year, the team provides two-day “spring training” sessions to help retailers and seed dealers learn how to apply seed treatments properly. “We also go to customers’ sites to work with them,” says Ramachandran, who adds there are 14 locations worldwide within the Syngenta global Seedcare Institute network.

“It’s a much different approach than our competitors,” he concludes. “We want people’s experience to be trouble-free and give them confidence in the effectiveness and high quality of our Seedcare solutions.”

Left: Quality-testing equipment at the Seedcare institute evaluates rub-off from treated seeds. Right: During a training session at the Seedcare Institute, Wanderson Oliveira (far right), Syngenta Seedcare platform specialist, explains best practices of handling treated seeds at planting to a group of customers.



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Building Cross-Cultural Ties

Syngenta pilots a new approach to the IFYE program, aimed at cultivating new thought leaders.

Growing up in Stendal, Germany, about two hours west of Berlin, Lisa Schmidt got an early taste of other cultures. Throughout her youth, her family hosted three students, two from the U.S. and one from Finland, through IFYE, formerly known as the International Farm Youth Exchange. This two-way cultural exchange program enables American young adults to live and work with host families in other nations and vice versa. Her brother also took part in IFYE, visiting Kansas. To Schmidt, it only made sense to keep the family tradition going by visiting the U.S. with IFYE in the summer of 2018.

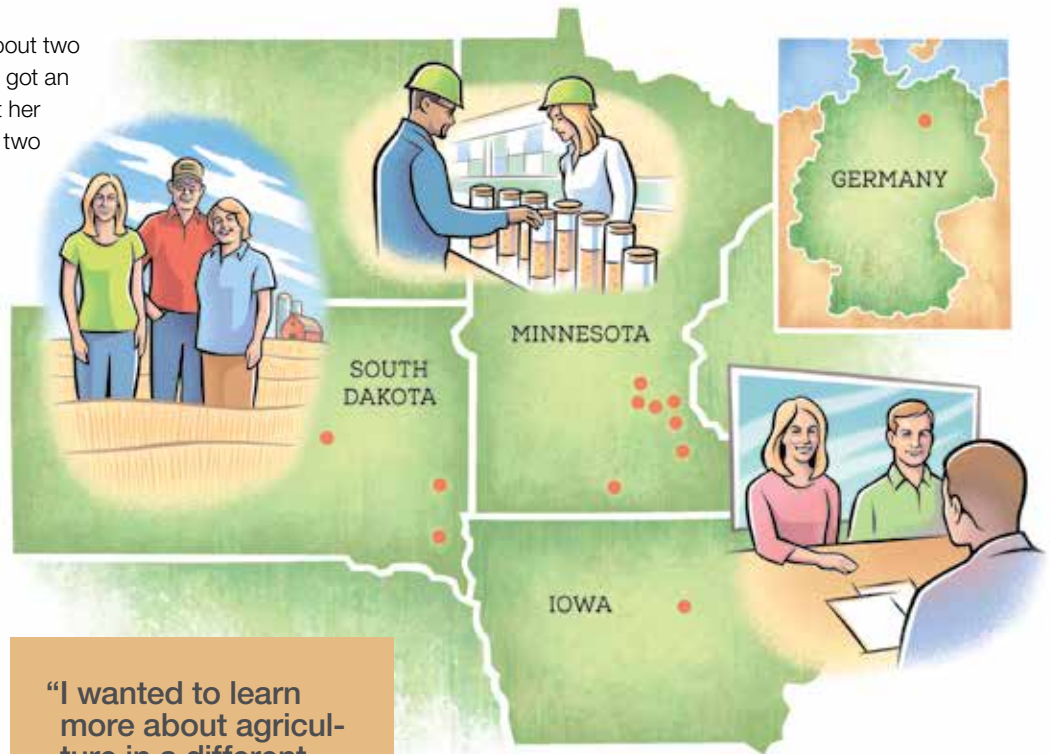
"I wanted to learn more about agriculture in a different country," Schmidt says. "I study agricultural science and grew up on a farm, so it was interesting to see how things work in a new place."

As familiar as IFYE was for Schmidt, it was a new and exciting opportunity for Jenny Heaton, head of people and organization development for Syngenta in North America. Heaton first heard about the program at a Minorities in Agriculture, Natural Resources and Related Sciences conference and knew Syngenta would be a great fit, as IFYE looked to move into the corporate space.

"I hoped to pilot the program in a way that we can replicate, so we can start thinking differently about introducing Syngenta opportunities to youth earlier—before they make major career-related decisions," Heaton says.

Planting the Seeds for a New Experience

IFYE typically places foreign students with four U.S.-based agricultural families in a single state, with students staying at each home for three weeks. Schmidt had three assignments



"I wanted to learn more about agriculture in a different country. I study agricultural science and grew up on a farm, so it was interesting to see how things work in a new place."

—LISA SCHMIDT

in South Dakota with farm families. But her three-week stay in Minnesota with Syngenta was unique.

Heaton wanted Schmidt to experience the broad spectrum of corporate agriculture, so she worked out a plan to have a different host family for each of the three weeks.

"I selfishly wanted to be a part of the host experience in our first pilot," says Heaton. But she made sure Schmidt's experiences with her three Syngenta hosts were all unique and worthwhile.

In her time with Heaton, Schmidt saw the diversity of work in agriculture, jumping headfirst into human resource initiatives, such as leadership development programming and organizational design.

In addition to Heaton, Schmidt spent a week shadowing Colin Steen, managing director of Syngenta Ventures, part of the global business development arm of Syngenta, and a week with Ilene Jones, a Syngenta sweet corn breeder.

Different Lands, Common Roots

Steen, like Schmidt, spent his early years experiencing new cultures. He grew up on a farm in Canada, but traveled to Australia in his youth to experience agriculture on the other side of the world. When he heard Syngenta was piloting IFYE, Steen was quick to volunteer. While Schmidt spent time with Steen, they discovered that they had a lot more in common.

“As I’ve learned more about the farming where Lisa grew up, I’ve realized it’s very similar to places in the U.S. and Canada,” Steen says.

Schmidt’s time with Steen also gave her a chance to see more than the two states that IFYE assigned to her. The pair traveled

south to Iowa to meet with representatives from companies that are prospective investment opportunities for Syngenta.

“When we visited prospective companies to invest in, it was great to get Lisa’s perspective of how those technologies would fare in Germany,” Steen notes.

From Seeds to Schnitzel

On the third leg of her Syngenta journey, Schmidt dove into the science behind the Syngenta seed industry. With Jones, she toured the Syngenta Seedcare Institute in Stanton and learned about the company’s sweet corn breeding program at other area research sites. Schmidt also had a chance to experience the Syngenta commitment to equality and diversity, by participating in a training session that the Syngenta Women’s Leadership group conducted.

“Our week was action packed,” Jones says. “From visiting the labs to touring local attractions, including the Minnesota Zoo, I think we both enjoyed the week. Lisa even shared her culture in the kitchen, by preparing us a classic German schnitzel.”

Beyond the Fields

IFYE is not just about exploring how different places grow food and raise livestock. For Schmidt, it’s also an important opportunity to learn more about global culture.

“It’s nice to spend time with the families and learn more about the language and culture in America,” Schmidt says. “It’s a different experience to live with someone versus traveling on vacation.”

That’s a sentiment Heaton echoes. “I have three young boys at home, and learning about new cultures is very important to our family,” she says. “So, it was great to have Lisa talk to my children about where she’s from.”

Schmidt is nearly finished with a master’s degree in agricultural sciences at Martin Luther University of Halle-Wittenberg, where she also earned her bachelor’s degree in agriculture. She hasn’t decided on a career path after school, but is leaning toward helping run the office at her boyfriend’s family farm. No matter what she ultimately does, she plans to use her knowledge gained from her time in the U.S.

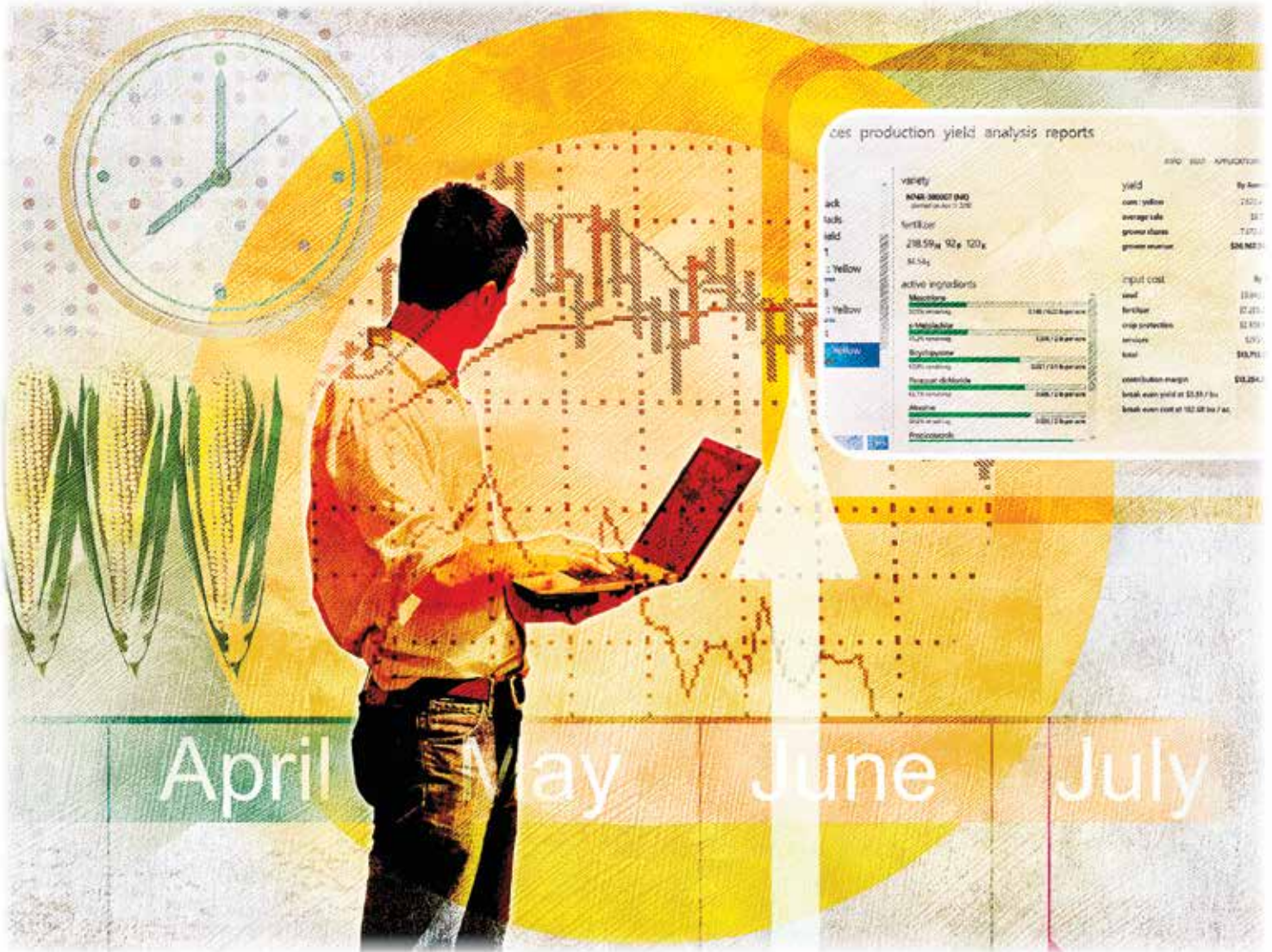
“All the other IFYE participants spent their time on farms in one state,” Schmidt says. “I was able to experience farm life in South Dakota and then learn about other aspects of agriculture in Minnesota and Iowa. It was an amazing adventure that I’ll always remember.” 🌱 STORY BY SHANE NORRIS



Left to right: Jenny Heaton, Lisa Schmidt and Colin Steen relax for a moment at Syngenta Seeds, Inc., in Minnetonka, Minnesota.

A Matter of Timing

Growers should consider selling their grain in the futures market—provided they have done their homework and have a well-thought-out, written plan.



crop production yield analysis reports

crop	yield	By Area
corn yellow	230.0	
average yield	237.0	
gross share	7,070.0	
gross revenue	\$26,820.0	

input cost	By Area
seed	\$3,910.0
fertilizer	\$7,250.0
crop protection	\$2,870.0
harvest	\$20.0
total	\$14,050.0

contribution margin	By Area
break even yield at \$3.85/bu	
break even cost at 102.00 bu/acre	

Just a few weeks can make a big difference in whether growers make a substantial profit or take a loss on grain harvests. Earlier this year, experts saw a dramatic difference on the Chicago Board of Trade in a short period of time.

“Late May was the high for the grain markets this spring,” says Rob Huston, vice president of origination for Gavilon Grain, LLC. “The average price of December corn

futures from March 1 until June 30 was \$4.04 per bushel, peaking around May 29. By the second week of July, it was about 55 cents per bushel less. That change can be the difference between making a profit or not.”

Trends to Follow

For growers, a volatile market increases the importance of anticipating and capitalizing on the highs. It sounds difficult,

but Steve Johnson with Iowa State University Extension says there are trends growers can monitor in the marketplace.

“This is the sixth straight year we’ve seen grain prices peak in a seasonal period between March and mid-July,” he says.

Johnson says production uncertainty for the upcoming growing season causes the peak. Variables, such as weather and disease pressure, could damage the potential planted acreage or crop yields, thus triggering speculative buying of crop futures contracts.

The Big Mistake

Ed Usset, a grain marketing specialist with the University of Minnesota, says a reluctance to preharvest market grain is one of the most common mistakes growers can make.

“I still meet growers who say they can’t price a new crop they just planted. Of course, they can,” he says. “Growers can know what their production costs are, by tracking what they put into the crop in terms of variable costs, such as fertilizers and seed costs. They can see what grain futures contracts are selling for on the Chicago Board of Trade, and they should know what grain is selling for locally. Preharvest marketing pays more often than not. If they see a futures price that’s more than their input costs, and they can forward-contract it for a profit ahead of time, why wouldn’t they?”

Huston agrees, but says it’s hard for growers to pull the trigger on forward contracts, because growers often don’t fully understand their average production history—usually based on a five-year yield average.

“But if they can anticipate an average yield and further break down their costs per acre to a cents-per-bushel basis, then it’s easier for them to visualize a profit when the market hits the next rally,” Huston says.

The Price of Storing Grain

With peak futures prices often occurring in the spring, growers may think the best course of action is to store grain over the winter to capitalize on the next spike. Storing grain allows growers to premarket a portion of their harvest and diversify their risk, by holding on to a portion to price at the next market rally. This is an important part of grain marketing that can offer benefits; however, storing grain also comes with its own set of risks.

“There’s always a quality risk that comes with storing grain,” says Craig Abell, Syngenta grower account lead manager. “It comes with higher fixed costs, because you have to manage moisture, keep the grain in condition, maintain the grain storage facility and cover interest expenses.”

Those fixed costs can add up. “Typically, we see crops stored for around eight months after harvest,” Johnson explains. “If they’re stored commercially, that meter is running.”

Johnson says on average, expect commercial storage charges of about 32 cents per bushel to store grain for that period of time, plus potentially another 8 to 10 cents of interest charges per bushel of corn. Since soybeans per bushel are valued at roughly three times that of corn, interest charges for soybeans can be as much as three times more.

That means if growers store 1,000 bushels of corn for eight months, they’re adding around \$3,200 to \$4,200 of overhead to their costs that they now have to make up at the next market rally.

Having a Plan

Keeping track of these costs is why many experts say growers need to have a written marketing plan. It’s also why farm-management software like Land.db®, the software within the AgriEdge Excelsior® program, can be a great resource.

“The software can show you exactly what you have in the crop,” says Jeff Peake, product lead with Ag Connections, a wholly owned subsidiary of Syngenta. “Growers track how much they spent on seed, insecticides, herbicides and more, and the program does the math for them. They can see what their break-even yield would be at a given price and what their break-even cost would be throughout the growing season.”

Then, when it’s time to sell, growers can input their contracts to see exactly how much they made, based off those variable costs.

Land.db can also tell growers where their grain is. Using their mobile devices, truck drivers can keep track of load tickets every time their truck crosses a scale.

“You can see those tickets delivered to a bin and how many bushels were delivered,” Peake says. “You can even look at your location history to see how many loads have gone into that bin, how many you’ve taken out and what’s still there.”

Trying to beat the market without a plan and firm grasp on their numbers is the biggest mistake growers can make, Peake adds. “There’s new technology all the time in agriculture, so if there are programs that can help growers profitably market their grain, before or after harvest, they should take advantage of them.” 🍀

STORY BY DANNY VIVENZIO

“Preharvest marketing pays more often than not. If [growers] see a futures price that’s more than their input costs, and they can forward-contract it for a profit ahead of time, why wouldn’t they?”

—ED USSET

Advocating for Ethanol

Syngenta and its industry partners are working to protect the future of ethanol, which has been a major success for agriculture—and for society as a whole.

Renewable fuels offer many upsides. For example, they reduce dependence on foreign energy as well as air pollution. “Advanced biofuels have the potential to reduce greenhouse gas emissions by more than 100 percent,” says David Hollinrake, president of Syngenta Seeds, LLC, and regional director of Syngenta, North America.

Renewables provide economic benefits as well. “During 2017 alone, the ethanol industry created and supported nearly 360,000 jobs and contributed roughly \$45 billion to the U.S. gross domestic product [GDP]—a number exceeding the total GDP of many countries,” Hollinrake says.

Ethanol saves consumers money, too. High-octane blends, such as E15, save consumers 5 to 10 cents per gallon at the pump, compared with conventional gasoline.

For all these reasons, the agricultural community, including Syngenta, work every day with industry coalitions to develop these fuels and keep them available.

Breakthroughs in Ethanol

To support the renewable fuels industry and U.S. growers, Syngenta developed Enogen[®] corn, an in-seed innovation that enhances ethanol production by delivering alpha-amylase enzyme directly in the grain.

“It’s the first in-seed corn enzyme in the world, and it’s exclusive to Syngenta,” says Jeff Oestmann, Syngenta head of biofuel operations. “Since its introduction, Enogen corn enzyme

technology has provided corn growers the opportunity to be enzyme suppliers for participating ethanol plants and earn a per-bushel premium.”

In fact, Syngenta expects grower premiums paid over the past few years to surpass \$100 million during 2018. According to data from Iowa State University, these premiums create an additional \$63 million in economic activity, for a total of \$163 million in cumulative economic benefit to the region.

And Syngenta also expects Enogen—now sold to 31 different ethanol plants—to expand. “Obviously our goal is to expand our

footprint for this revolutionary technology, so we continue to talk to more and more ethanol producers,” says Oestmann. “It really sets the baseline for the industry’s continued growth and progress.”

“Because there’s such global appetite for our product, and we make ethanol cheaper than anybody else, we know we can be exporting more every year.”

—EMILY SKOR

Policy Work

Keeping ethanol available also means working to affect policy. A key policy issue of concern is the Renewable Fuel Standard (RFS), which was created to reduce greenhouse gas emissions and expand the renewable fuels sector. Today, there are calls to repeal or reform it. Growth Energy, the nation’s top advocate for



ethanol producers and supporters, including Syngenta, is fighting those efforts.

“The RFS says we as a nation are committed to using renewable fuel, and every year we’re going to use more,” says Emily Skor, CEO of Growth Energy. “The EPA [Environmental Protection Agency] comes out with blending targets, and those targets increase each year. A lot of our political activity is making sure the EPA implements the law as Congress intended.”

Market competition from the petroleum industry drives much of the conversation around reforming the law, she adds. “Tension is growing right now because we’re successful and using more than 10 percent ethanol. We’ve got 30 states offering even higher blends.”

Blending Regulations

Another area of policy focus is around Reid Vapor Pressure (RVP), a measurement of how quickly fuel evaporates. “When you add ethanol to gasoline, RVP spikes initially,” Skor says. “That score is above the national threshold, but the EPA recognized that while the volatility goes up initially, the emissions are much cleaner. The benefit offsets their concern over volatility.”

To acknowledge that, the EPA granted an RVP exemption to fuel with 10 percent ethanol. But now, fuel retailers want to offer their customers E15: fuel with 15 percent ethanol and 85 percent gasoline. Because E15 has no RVP waiver, current regulations say that in the summer months, much of the country cannot sell it.

Industry members are working to change that. “We’re asking simply to level the playing field and ensure that the RVP waiver is there for both E10 and E15 year-round,” says Oestmann. “Greater access to E15 during the high-volume, gasoline consumption summer months will further reduce our dependence on imported oil. Consumers deserve choice, especially during the summer, when gasoline prices are higher.”

Trade Volatility

America is the world’s top ethanol exporter, trading more than 1 billion gallons of ethanol annually. “Because there’s such global appetite for our product, and we make ethanol cheaper than anybody else, we know we can be exporting more every year,” Skor says.

But the current trade environment has become complicated. “Last year, China was one of our top three trading partners,” Skor says. “This year, we’re not sending any gallons to China, because they’ve got tariffs in place. A lot of our conversation with the U.S. government stresses that growers need access to these markets.”

Still, the productivity and efficiency of U.S. growers are unparalleled in the world, says Erik Fyrwald, Syngenta CEO, and that puts them in the strongest possible position during these negotiations.

“Right now, there’s a lot of negotiating going on, but in the end, they’ll get to solutions,” Fyrwald says. “A critical part of the solution can be more exports of agricultural products from the U.S. to China.” That’s what Syngenta and its industry partners will be working toward. 🌱 STORY BY SUZANNE BOPP

THE COLOR’S THE SAME.



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Ripple Effect

Syngenta introduces this year's #RootedinAg finalists, produces a new weed-management video series and sponsors the Iowa 250 presented by Enogen.

CONTEST

Winner Selected in #RootedinAg Contest

Judges' scores and your online votes have determined the grand prizewinner of the 2018 #RootedinAg Contest.* This annual competition started back in the spring, when *Thrive* asked its readers to describe in 200 words or less the person who most inspired their agricultural roots. A panel of judges then named five finalists, based on the quality of their entries, which also included a supporting photograph or video. Syngenta awarded each finalist with a mini touch-screen tablet and the chance to compete for the grand prize—\$500 and a \$1,000 donation to his or her favorite local charity or civic organization.

"Every year, we're so pleased to honor the people who have helped others establish enduring agricultural roots," says Wendell Calhoun, Syngenta communications manager. "This year was no different, and we're thankful to everyone who shared their stories."

Thrive will feature a more in-depth article on the winner in our 2019 winter issue. But to find out now which one of the following finalists is the 2018 #RootedinAg champion, go to www.syngentathrive.com:

1. **Steve Frizzell** (center) from Star City, Arkansas, stands with his brother Joe (left) and his dad, Burnice, (right) in this nostalgic photo taken on their southeast Arkansas cotton farm. Frizzell credits his dad for igniting his deep love of agriculture.





2. **Katharine Girone** (right) from East Peoria, Illinois, has modeled her ag journey after the lessons her grandfather Kenneth McKee (left) taught her on their five-generation family farm.
3. **Carie Moore** (right) from Rocklake, North Dakota, says her husband, Jason (left), is the person who most inspired her love of agriculture, which she's passing along to her four children, including 6-year-old Greyson (center).
4. **Madison Moore** (right) from Prosser, Washington, says her grandfather Carl (center) has taught her brother Harrison (left) and her many valuable lessons over the years, including how to efficiently use resources on their family farm.
5. **Richard VanVranken** (center) from Mays Landing, New Jersey, says 4-H agent Albert Lounsbury helped him launch a successful career in ag. In this photo, VanVranken checks out an ethnic produce field trial with his Rutgers Cooperative Extension colleagues, Albert Ayeni, Ph.D., (left) and Ramu Govindasamy, Ph.D., (right).



*NO PURCHASE NECESSARY. See Official Rules for more details.

EDUCATIONAL TOOLS

Syngenta Offers New Weed-Management Video Series

In the battle against resistant weeds, Syngenta continues to educate growers and retailers about the most effective ways to manage resistant weeds in their fields through the Resistance Fighter® program. As part of this program, the company recently developed a new agronomic resource—the “How It’s Done” video series.

In the videos, Joe Wuerffel, Ph.D., a research and development scientist in the weed-management group at the Syngenta Vero Beach Research Center in Florida, advises viewers on how to quickly identify and manage some of today’s toughest resistant weeds in corn and soybeans, including waterhemp, Palmer amaranth, giant ragweed and kochia. The videos also answer common questions about herbicide application timing and address other agronomic topics.

“Winning the battle against resistant weeds requires the right strategies and information,” Wuerffel says. “That’s what these videos are all about.”

To view the “How It’s Done” video series, visit www.syngentathrive.com/farmproduction.



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Enogen Gets the Green Flag

This year's Iowa 250 presented by Enogen celebrates the contributions of Enogen corn enzyme technology—and highlights the bright future of ethanol.

A waving green flag signaled the start of the Iowa 250 presented by Enogen, a 250-lap NASCAR® Xfinity Series race held June 17 at Iowa Speedway in Newton, Iowa. The green flag also signaled the continuing partnership between

the speedway and Syngenta, which has sponsored the ethanol-fueled race for the past six years.

Ethanol, more specifically E15, has helped power NASCAR nationwide since 2011—the same year Syngenta

introduced Enogen® corn enzyme technology, an in-seed innovation that delivers the alpha-amylase enzyme directly in the grain to enhance ethanol production. During this time, NASCAR drivers have driven more than 11 million miles on the fuel, in turn, making consumers more aware of its benefits.

“NASCAR fans are very loyal, and when they see a product like ethanol that supports their sport, they tend to seek it out and use it.”

—DAVID HYATT

“NASCAR fans are very loyal, and when they see a product like ethanol that supports their sport, they tend to seek it out and use it,” says David Hyatt, president of the Iowa Speedway. “Syngenta and Iowa corn growers have been instrumental in promoting the Iowa 250, the sport and the NASCAR and ethanol brands.”

In addition to fueling their cars, ethanol also contributes to the economic well-being of many Iowans. According to the Iowa Farm Bureau, the ethanol industry supported 39,592 jobs in the state, accounting for \$4.2 billion of Iowa's gross domestic product in 2015. Ethanol plants in Iowa made more than a quarter of the ethanol produced in the U.S. in 2017, using about 1 billion bushels of corn, according to the Iowa Renewable Fuels Association.

And an increasing number of growers in Iowa and throughout the Corn Belt are planting Enogen corn. Syngenta forecasts that growers will produce more than 280 million bushels of Enogen corn on about 1.5 million acres by year's end. That corn will be used to make an estimated 7 billion gallons of ethanol at about 30 ethanol facilities currently using the enzyme.

For producing Enogen corn, growers can earn premiums, the total of which paid over the past few years could exceed \$100 million in 2018. Those earnings benefit rural economies several times over. And agricultural resellers benefit, by providing a product that adds value and differentiation to their offerings, says Chris Tingle, head of commercial operations for Enogen at Syngenta.

Back at the racetrack, engine builders give ethanol a green flag, because it burns cooler and has a higher octane level than regular gasoline, Tingle says.

And what about the Iowa 250? From green flag to checkered flag, driver Justin Allgaier dominated the race. He swept all three stages and earned his second NASCAR Xfinity Series victory in 2018.

Allgaier summed it up nicely: “Incredible. We're in the middle of cornfields—how could you not enjoy this?”

STORY BY LYNN GROOMS



Left: Race winner Justin Allgaier celebrates his victory with his fans, following the Iowa 250 presented by Enogen.



SEE MORE PHOTOS.

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Craig Abell, grower account lead manager at Syngenta, waves the green flag to officially start the Iowa 250 presented by Enogen.





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