

Growing Together

>>>> 4Q | 2019

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40

YEARS OF
SEEDCARE
INNOVATION

Treated Well

**Protected Seeds
Stay Strong Against
Pests, Diseases**

**NEW SALTRO SEED
TREATMENT HELPS
REDUCE RISK OF SDS**

**FOCUSED USE OF
FARM DATA YIELDS
BETTER RESULTS**

syngenta[®]

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thrive

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.



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 Syngenta seed treatments provide seeds with state-of-the-art protection from pests and diseases.
 Photo composite: Ryan Etter; Photo: Shutterstock

THIS PAGE
 In 2020, Saltro® fungicide seed treatment will offer growers superior SDS protection resulting in a healthier soybean plant like this one and higher potential yields.
 Photo: Mark Zhu

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.



Nothing Less Than Our Best

While our past is a roadmap to where we are today, the hope for a better future is the driving force that continually propels us forward. At Syngenta, we've been developing industry-leading seed treatments for more than four decades. But it's our robust pipeline of novel Seedcare solutions that fuels our imaginations and fortifies our confidence that tomorrow will be even brighter.

Our sustained focus on seed treatment excellence is the foundation of our current portfolio and pipeline. As the No. 1 seed treatment provider in the world, we have dedicated teams who work specifically to solve crop challenges in ways that only on-seed technologies can. From the CruiserMaxx®, Avicta® and FarMore® family of brands to Dynasty®, Plenaris® and Vibrance® seed-applied fungicides, our products have a rich history of helping to manage a wide range of pests across a diverse mix of crops.

To maintain this momentum, Syngenta vigorously invests in research and development. On average, we spend more than 10 years and nearly \$280 million to develop each new seed treatment molecule that we bring to market. As this issue of *Thrive* reports, one of our most promising advances is a remarkable seed treatment for protecting soybeans from sudden death syndrome. This game-changing technology — Saltro® fungicide seed treatment — is available to growers for the 2020 planting season. Additionally, we have a number of fungicide, insecticide and nematicide seed treatments in our pipeline that are showing tremendous potential.

Of course, we understand that having great products is only part of a winning equation. We also must offer outstanding customer service when it comes to accurately using and stewarding those products in the field. As a result, we have dedicated Seedcare sales and technical support teams who partner with resellers in their local markets to help growers extract the greatest value from our products.

We also established The Seedcare Institute™ in Stanton, Minnesota, where Syngenta experts develop seed treatment formulations that stay on the seed while minimizing dust off. The Stanton location also hosts numerous training sessions each year, so participating resellers can learn how to build better recipes and make more precise on-seed applications.

As the 2019 season comes to a close and the focus shifts to 2020, our goal at Syngenta Seedcare is to supply our customers with the best seed treatments, combined with the best service in the industry. After all, they deserve nothing less than our best. 🌱



ROSS WEIKEL

“At Syngenta, we’ve been developing industry-leading seed treatments for more than four decades. But it’s our robust pipeline of novel Seedcare solutions that fuels our imaginations and fortifies our confidence that tomorrow will be even brighter.”

ROSS WEIKEL
Head of Seedcare in North America
Syngenta Crop Protection LLC



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



What's in Store

Learn about new products, news and events, and the chance to win gift cards by participating in this year's *Thrive* readership survey.

NEW PRODUCTS

New AgriPro Brand Spring Wheat Varieties Tailored to Meet Growers' Needs

Syngenta adds four AgriPro® brand spring wheat varieties for the 2020 planting season, giving growers more options to meet their farm and marketing needs:

- **AP Renegade** is an excellent fit for the diverse moisture zones in the Pacific Northwest. It produces a high yield with good protein, while having a strong disease package and Hessian fly resistance.





Kevin Capistran (left) pulls a healthy sample of wheat growing on his farm in Crookston, Minnesota, to show to his AgriPro representative, Corey Dathe (right).

- **SY McCloud** is a well-rounded variety for the Northern Plains market, building on some of the best traits in other AgriPro brand varieties. It provides strong disease tolerance and standability that help result in high yield and protein, plus excellent test weight.
- **SY Longmire** helps solve the sawfly challenge. This solid stem variety has excellent sawfly tolerance, a strong disease package, and excellent yield and protein for the Northern Plains market.
- **SY 611 CL²** is a step up if growers are looking to diversify their weed management options. It's showing high yields and good standability in the Northern Plains market.

Visit www.agriproheat.com for additional information.



A.I. Powers New NK Seed Selection Tool

Syngenta has launched a new digital platform to help farmers maximize profit through data-driven seed recommendations. The NK[®] Seed Analyzer combines artificial intelligence (A.I.), detailed agronomic information and a simple user interface, extending the NK brand's focus on innovation by adding value beyond seed.

The adaptability of the platform allows retailers and farmers to proactively plan for weather volatility, soil variability and planting specifications by seeing actual results from numerous sources. The tool complements retailers' and agronomists' expertise with 18 years of data at no cost to the user.

"The NK Seed Analyzer represents the best that NK has to offer," says Todd McRoberts, NK agronomy manager. "Using cutting-edge technology, the platform helps to provide clear, unbiased product recommendations that streamline decision-making and deliver customized solutions for any farm."

For more information, contact a local NK sales representative.

"Using cutting-edge technology, the [NK Seed Analyzer] helps to provide clear, unbiased product recommendations that streamline decision-making and deliver customized solutions for any farm."

— TODD MCROBERTS

NEWS AND EVENTS



Agrisure Duracade Receives EU Import Approval

Syngenta has received import approval for its Agrisure Duracade® trait (event 5307) from the European Commission. The approval covers corn grain for food and feed use within the countries of the European Union (EU).

“This trait approval is an important milestone, demonstrating our commitment to bring new, innovative technologies to help growers protect and maximize their yield,” says David Hollinrake, regional director for Syngenta, North America. “The Agrisure Duracade trait gives a new trait rotational option for corn rootworm management for a healthier corn crop and higher yield potential.”

For information about regulatory authorizations of Agrisure Duracade, go to www.bi tradestatus.com.



#RootedinAg Contest Winner Named

To find out who the winner of the 2019 #RootedinAg Contest is, please go to www.syngentathrive.com/news.



An FFA student describes how she is #RootedinAg on a Syngenta barrel during the National FFA Convention & Expo in Indianapolis, Indiana.

UPCOMING TRADE SHOWS AND CONFERENCES

Syngenta is previewing its 2020 technologies and solutions at upcoming events across the country. To find a location convenient for you, check out the calendar of trade shows and conferences below:

October 2019

30–Nov. 2 National FFA Convention & Expo, Indianapolis, Indiana

November 2019

3–5 45th Annual CAPCA Conference & Agri-Expo, Reno, Nevada

13–15 National Association of Farm Broadcasters (NAFB) Trade Talk, Kansas City, Missouri

17–22 American Society of Farm Managers and Rural Appraisers (ASFMRA) Annual Conference, Louisville, Kentucky

18–21 National Agricultural Aviation Association (NAAA) Ag Aviation Expo, Orlando, Florida

December 2019

3–5 Agricultural Retailers Association (ARA) Conference & Expo, New Orleans, Louisiana

9–12 American Seed Trade Association (ASTA) CSS & Seed Expo, Chicago, Illinois

January 2020

7–10 National No-Tillage Conference, St. Louis, Missouri

9–20 Southeast Regional Fruit and Vegetable Conference, Savannah, Georgia

14–15 Potato Expo 2020, Las Vegas, Nevada

30–31 National Conservation Systems Cotton & Rice Conference, Memphis, Tennessee



Give Us Your Opinion, and We'll Give You a Chance to Win!

At Syngenta, one of our top priorities is giving you information that can help your farm or business succeed. Please let us know how we're doing with *Thrive* by taking a few moments to complete our simple online readership survey. In exchange, you could **win one of three \$200 Amazon.com Gift Cards** in our grand-prize drawing.



The **first 10 people** who complete the survey will receive a **\$25 Amazon.com Gift Card**, compliments of Syngenta.



Disclaimer: Amazon.com is not a sponsor of this program. Restrictions apply, see amazon.com/gc-legal. No purchase necessary to participate. Purchase does not improve your chances of winning. Void where prohibited by law. Must be 18 years or older and a resident of the continental United States to be eligible. Employees of Syngenta, its affiliates and agents are not eligible to win. Estimated retail value of each grand prize: \$200. Estimated retail value of each gift card for the first 10 survey respondents is \$25. Winners will be selected by random drawing to be held on December 31, 2019. Winners need not be present to win. Syngenta will attempt to deliver all prizes to Winners by U.S. Mail no later than January 31, 2020. Return of any prizes as undeliverable will result in disqualification, and an alternate may be selected. The odds of winning will be determined by the number of entries. Only one entry per person. All entries will become the property of Syngenta. In accepting prizes, Winners grant Syngenta and its advertising and promotional companies associated with the giveaway a license to use Winners' names, likenesses, quotes and photographs. All taxes and other expenses associated with the receipt and use of all prizes are the sole responsibility of Winners. Awarded prizes are not transferable and cannot be redeemed for cash. No substitute prizes will be given. See official rules for more details.

Head Strong

While *Fusarium* head blight continues to threaten cereal crops, a Syngenta technical expert explains why an innovative fungicide is giving growers renewed hope.

Q. What causes *Fusarium* head blight, and what are the disease symptoms?

A. Eric Tedford, Ph.D., technical product lead for fungicides at Syngenta Crop Protection:

Fusarium head blight, or head scab, is caused by the soilborne fungal pathogen *Gibberella zeae*, also known as *Fusarium graminearum*. The symptoms of *Fusarium* head blight include heads that look like they've been bleached. Infected heads die prematurely and lose the normal green color of a healthy head. Infected grain shrinks and wrinkles as it loses moisture and often takes on a soft-gray to pink color.

“Our goal is to provide the resources our customers need to get the most out of every application they make. We look forward to developing more solutions that can help boost their chances for success.”

— ERIC TEDFORD

Q. Why is this disease such a threat to cereal crops?

A. In addition to reducing grain yield and quality, the pathogen that causes *Fusarium* head blight also produces mycotoxins — including deoxynivalenol, also known as DON or vomitoxin. The Federal Drug Administration regulates these toxins, and it can reject crops if toxin levels exceed regulated tolerance levels, which are generally set very low in parts per million.

Q. What fungicide solution does Syngenta offer to help manage the disease?

A. There are very few fungicides registered for control of *Fusarium* head blight because the pathogen that causes the disease, *Fusarium graminearum*, is so difficult to manage. Until the recent development of Miravis® Ace fungicide, Syngenta didn't have a horse in the race. Miravis Ace contains our new carboximide active ingredient, Adepidyn® fungicide. A good way to think about how it works is to envision the fungus as a lock and the Adepidyn molecule as a key. To kill the pathogen, the key needs to fit into the lock. We were able to stretch the Adepidyn molecule by adding an N-methoxy ethyl linker, so that it would fit into the locks of difficult-to-control pathogens like *Fusarium*, *Sclerotinia* and *Corynespora*. As a result, we now have a fungicide that can control *Fusarium* head blight on cereals as well as white mold and target spot on soybeans.



ERIC TEDFORD
Technical Product Lead,
Fungicides, Syngenta
Crop Protection

Harvested grain from untreated wheat field



Harvested grain from wheat field treated with Miravis Ace fungicide



Q. Why is Miravis Ace considered a step change in *Fusarium* head blight management?

A. *Fusarium* head blight is a challenging disease to manage because, generally, for good control, you need to protect the flowers; and the best results occur when fungicides are applied as near as possible to full flowering. This is a fairly short window of time. For many large growers, it means they have to treat vast acres in a relatively short time frame.

Adepidyn has excellent biokinetic or stamina-related features that allow for greater application flexibility. This flexibility means we can begin applications of Miravis Ace sooner than full flowering, without compromising efficacy or yield benefits. Growers can actually apply at 50% head emergence instead of waiting for full flowering. This also means that growers can start spraying sooner to get across their acres, without racing the clock and with a greater window for successful coverage. In short, Miravis Ace is a step change, compared with the other fungicides that are registered for *Fusarium* head blight control.

Q. Does Miravis Ace fungicide only control *Fusarium* head blight?

A. No, Miravis Ace contains two active ingredients: Adepidyn and propiconazole, both of which have broad-spectrum



Applied at flowering on April 24, 2019, Miravis Ace fungicide made a huge impact on this wheat field in Union County, North Carolina, as evidenced by the lighter, fuller heads 53 days after application. The untreated center of the field is noticeably darker and less vibrant.

activity against a number of foliar diseases of cereals. In addition to *Fusarium* head blight, Miravis Ace provides control of barley scald, black point, *Helminthosporium* leaf spot, powdery mildew, leaf and glume blotch, net blotch, *Septoria* blotch, spot blotch, rusts, and tan spot. When applying Miravis Ace, growers benefit from the control of multiple diseases, not just one.

Q. What other agronomic practices can help growers protect their acreage?

A. Any agronomic practice that will minimize the pathogen population can help out some. For example, it's best to rotate crops so that you aren't growing wheat after wheat or wheat after corn. Deep plowing infected debris can also reduce surviving inoculum. There are no varieties that are fully resistant to *Fusarium* head blight, but you can select varieties that have moderate levels of resistance.

Q. Where can growers and resellers go for more information on controlling this costly disease?

A. At Syngenta, we're always here to answer questions and offer assistance that can help growers and resellers overcome the challenges they face in the field, including those that *Fusarium* head blight causes. All across the country, we have local experts who can provide one-on-one support. Our easy-to-use Rep Finder tool at www.syngenta-us.com/rep-finder can help connect growers and resellers to our representatives in their areas. Also, technical experts in our Customer Center are just a phone call away at 1-866-SYNGENT(A) (796-4368). For more information specifically on Miravis Ace, people can go to www.sprayearlier.com.

Our goal is to provide the resources our customers need to get the most out of every application they make. We look forward to developing more solutions that can help boost their chances for success. 🌱 INTERVIEW BY SUSAN FISHER

Plenty for All

Syngenta Sustainable Solutions connects value chain partners for their mutual benefit.



As consumers demand greater transparency as well as social and environmental responsibility, Syngenta Sustainable Solutions is spearheading a series of projects and partnerships that connect the entire value chain and promote advances in modern agriculture.

“Syngenta plays a vital role in the food chain to safely feed the world and take care of our planet,” says Liz Hunt, Sustainable Solutions lead at Syngenta. “We’re making sure there are enough resources for everybody to have the food and nutrition they need, while being good stewards of the land.”

To address consumers’ concerns and ensure long-term viability for U.S. agriculture, the responsibility can’t fall entirely on one segment of the value chain. Companies and growers must work together to meet the challenges and demonstrate results of sustainable agriculture.

Industry Alliances

Believing that businesses must play a greater role in helping growers farm more sustainably, Syngenta has taken on leadership roles in several influential organizations dedicated to improving sustainability practices across the entire agricultural supply chain. These partnerships include long-term commitments with organizations, such as The Sustainability Consortium, The Nature

Conservancy and Field to Market: The Alliance for Sustainable Agriculture. (See “A Sustainable Future,” p. 26, for more information on The Nature Conservancy/Syngenta partnership.)

“Syngenta is very active in a number of organizations that are determining the right metrics and the right ways to measure sustainability on farms,” Hunt says. “We’re keeping the farming community, whether that’s growers or ag retailers, at the center of the discussion to make sure it’s working for everyone.”

Syngenta also works directly with consumer-facing, downstream businesses, like General Mills, to help deliver key insights to growers. With the help of Syngenta, growers can measure and better understand changes in multiple environmental indicators for water, soil, energy and greenhouse gas emissions, so they optimize crop inputs for production. These metrics then address the desire of consumer companies to reduce their environmental footprint, demonstrate resource efficiency and advance progress against sustainable sourcing commitments.

“Our partnership with Syngenta Sustainable Solutions is longstanding,” says Kevin O’Donnell, global director for Sourcing & Operations Sustainability at General Mills. “Syngenta was our original connected data partner to help us better leverage the Field to Market (FTM) calculator metrics, help growers with more efficient entry of those metrics and provide value back to them,

which really brings our grower engagement to life. Syngenta also developed the algorithms that allowed us to measure related indicators in our sugarbeets supply chain years before these were formally built into the FTM calculator.”

Data-Driven Recommendations

A common phrase used across the agriculture industry is, “You can’t manage what you don’t measure.” To truly drive improvements and provide evidence of efficiency through metrics, proper data collection from growers’ fields becomes even more necessary.

Syngenta understands this need and partners with companies like Agspring — a leading provider of grain, oilseed and specialty-crop handling, processing and logistics operations — to help collect and distribute anonymized data upstream from growers’ fields to consumer-facing companies downstream. This process helps improve and develop sustainable agricultural supply chains.

“Syngenta is an ideal partner to collect fact-based, scientifically valid data around what’s happening in production,” says Bradford Warner, vice president of marketing for Customer Engagement and Sustainability at Agspring, which is headquartered in Leawood, Kansas, but serves customers nationwide. “It also gives the producer better grounding at the nexus between increasing profitability and reducing environmental impact.”

By using record-keeping software like Land.db®, the exclusive cloud-based technology from Syngenta, growers are able to maximize the data they’re already recording and turn it into insights for sustainable agriculture. Growers can then provide the data and measurements the rest of the value chain is requesting.

“Technology like Land.db gives growers an opportunity to leverage data and insights in order to assess how things are happening across the whole farm,” says Jay Watson, manager of Sustainability Engagement at General Mills.

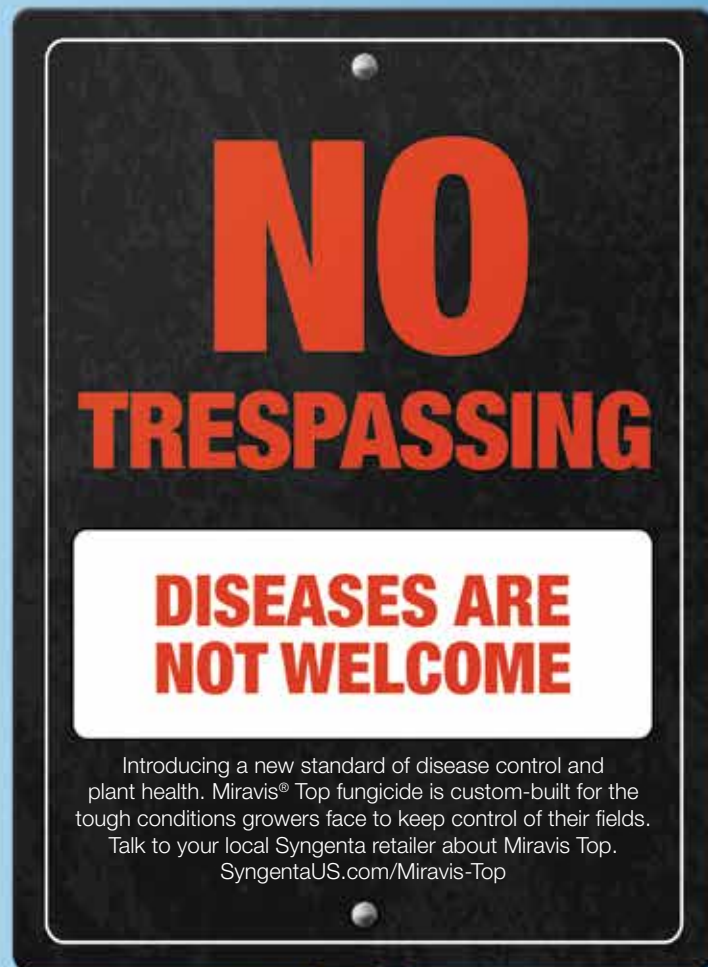
Impact on Growers

With sound measurements and cross-industry connections, growers are able to adapt to the sustainability demands of consumers, consumer-facing companies and modern agriculture, while also improving their on-farm efficiencies.

“These collaborations not only enable the food and beverage companies to satisfy the consumer requests for transparency, but they are also helping growers make their crops more marketable and sustain their farming businesses for generations to come,” Hunt says.

Nathan Garner, a farmer in Declo, Idaho, saw firsthand the benefits of making his operation more sustainable. In 2015, Garner began using Land.db and, over the last five years, was able to cut overall equipment usage by 30% to 40%, while also increasing his yields across the board by 10%.

“We’re using a lot less water. We’re using a lot less electricity. It’s almost a snowball effect,” Garner says. “You focus on one thing, and you cut expenses on everything else. I don’t know why you wouldn’t want to be more sustainable.” 🌱 STORY BY SARAH POHLMAN



 **Miravis® Top**

syngenta®

40 YEARS
OF SEEDCARE





SEEDCARE

Extraordinaire

Syngenta Seedcare continues its long history of excellence with new seed treatment innovations and outstanding service.

By Darcy Maulsby | Photography by Tim Pearson



When you're running a seed treating business and need to apply a specific amount of seed treatment per seed, the last thing you need is a technical glitch, like a plugged filter that disrupts the operation.

"Seed treatments have to work in the field, but you also need them to work during the seed treatment process," says Gary Geske, an independent seed treater from Enderlin, North Dakota. "If things don't flow properly, it's such a hassle to shut down the seed treatment line."

Accuracy and consistency are also vital to Geske, whether he's treating seeds in the cooler morning or warmer afternoon hours. "You can't afford to have treatment accuracy way out of whack. If you underapply and the seed treatment doesn't work, you've lost a customer for life."

That's why Geske appreciates Syngenta Seedcare. With 40 years of market leadership in treating seed, Syngenta provides the proven seed treatment solutions Geske's customers need to grow healthy, robust crops.

"Not all seed treatments are created equal," says Geske, who has used Syngenta Seedcare products for 15 years. "Syngenta products just work. The quality of its seed treatments is top-notch, and Syngenta Seedcare specialists are very knowledgeable."

A Legacy of New Product Development

Syngenta has been on the forefront of seed treatment research and innovation for four decades, starting in 1979 with Concep®, the first sorghum seed safener. Since then, the use of Syngenta seed treatments has grown exponentially.

"Even in times of lower commodity prices, seed treatments still have a high return on investment, especially with early planting," says Ross Weikel, head of Syngenta Seedcare. "From diseases and insect pests to unpredictable weather, growers don't know what challenges they're going to face during the growing season. We're providing solutions that can help, no matter the situation."



SEE MORE PHOTOS.
[www.syngentathrive.com/
farmproduction](http://www.syngentathrive.com/farmproduction)

This became clear in 1982 with the introduction of Apron® fungicide seed treatment. “This seed treatment fungicide was a game changer,” says Ravi Ramachandran, Ph.D., head of The Syngenta Seedcare Institute™ (SCI) for North America in Stanton, Minnesota. “It provided excellent control of downy mildews and — with later Apron XL® formulations of the product — devastating diseases, like *Pythium*, to help give growers the confidence to maximize their crops’ yield potential.”

As seed treatments evolved, Syngenta focused on crop safety and stewardship every step of the way. While growers used to apply 50 to 200+ grams of active ingredient (a.i.) per acre to control pests and diseases, new Syngenta seed treatments only required 1 to 15 grams. “These modern seed treatments were also much more effective than older chemistries, since molecules could be designed to target specific disease and pest organisms,” Ramachandran says.

One milestone for Syngenta was its 1993 launch of Maxim® seed treatment fungicide — the first seed treatment to be labeled “reduced risk” by the Environmental Protection Agency (EPA). Another big step change came in 1997 with the introduction of Cruiser®, the first seed treatment insecticide that Syngenta launched globally. More Cruiser seed treatment options emerged during the 20 years since its initial launch, including CruiserMaxx® Vibrance® Beans, insecticide/fungicide seed treatment, a combination of separately registered products, which optimizes root health, stress tolerance and plant vigor in soybeans for better emergence and increased crop productivity.

Syngenta also developed Avicta®, the first seed treatment nematicide, introduced in 2006; Clariva® pn, the first biological seed treatment nematicide, introduced in 2013; and Vibrance®, the first fungicide from Syngenta specifically developed for use as a seed treatment.

The latest Seedcare offering from Syngenta — Saltro® seed treatment fungicide, which recently received EPA registration — marks yet another

breakthrough in the company’s long history of seed treatment innovation. “Saltro is going to be a huge product in soybeans,” says Weikel. “It promises to preserve yield potential by protecting soybeans from sudden death syndrome (SDS) without displaying any of the damaging side effects of phytotoxicity.”

In addition to SDS, Saltro will offer protection against nematodes, including soybean cyst nematode. “It will be easy to treat seeds with Saltro, because we specifically designed the formulation to fit this market, plus we have tested it extensively at The Seedcare Institute,” Ramachandran says. (See “Stop SDS in Its Tracks,” page 20.)

While row crop seed treatments are important, Syngenta Seedcare also supports other crops with technologies, including Dynasty® PD, the first seed-delivered fungicide for peanuts, and Plenaris®, a fungicide seed treatment for sunflowers. There’s also the FarMore® Technology Platform, an on-seed application of separately registered seed protection products and proprietary application technologies designed to help vegetable growers maximize production.

With all of these products from Syngenta Seedcare, the goal is to help growers protect their seed investment, so they can get their crops off to the healthiest start possible.

JOE KUZNIA: DELIVERING SEEDCARE SOLUTIONS

How can lessons from a potato field lead to improved seed treatments? That’s the magic of The Syngenta Seedcare Institute™ (SCI) for North America and its skilled team members in Stanton, Minnesota.

“I put on my farmer’s hat to view things through the growers’ eyes,” says Joe Kuznia, a Syngenta Seedcare platform lead who has worked at Syngenta for 24 years. “Solving challenges early on can boost the crop’s yield

potential, which boosts the growers’ income potential.”

When Kuznia worked in the Red River Valley, he observed that spraying the edge of a potato field could slow down the migration of Colorado potato beetles. This practice sometimes eliminated the need to spray entire fields multiple times. “Farmers were thrilled, because this saved them a big chunk of change,” says Kuznia, who also modified

sprayers for greater accuracy in sugarbeet fields.

Kuznia brings this same solutions-oriented mindset to Syngenta Seedcare, from the development of treatment recipes to accurate seed coat application. He provides hands-on training for retailers who come to Stanton for basic and advanced seed treatment classes.

“Joe speaks their language,” says Ravi Ramachandran, Ph.D., head of the SCI for North America. “He embodies what the institute represents: a passion for problem-solving and a relentless commitment to develop the best seed treatments and service in the industry.”

Finding new ways to optimize seed treatments in real-world settings motivates Kuznia and his colleagues at the SCI. “I want to empower retailers and growers to succeed with Syngenta Seedcare,” he says.



Joe Kuznia, a Syngenta Seedcare platform lead, spearheads a training session with resellers at The Seedcare Institute in Stanton, Minnesota.

40 YEARS OF SEEDCARE



“SYNGENTA PRODUCTS JUST WORK. THE QUALITY OF ITS SEED TREATMENTS IS TOP-NOTCH, AND SYNGENTA SEEDCARE SPECIALISTS ARE KNOWLEDGEABLE.” — GARY GESKE

“Growers make large investments in seed genetics, plus they’re planting much earlier to maximize yield potential,” says Shawn Potter, head of Seedcare product marketing for Syngenta. “The first three to four weeks are the most critical for seedlings. Seed treatments help them get off to a good start, even in cold, wet conditions.”

Partnerships Enhance Application Technology

While Syngenta has focused on developing new seed treatment technologies for decades, the team at The Seedcare Institute™ has also helped modify and fine-tune seed treating equipment along the way.

As demand for treated seed grew by the early 2000s, Syngenta helped develop continuous-flow treaters. “We put one of these drum treaters on a trailer and took it across the country to teach people how to use it,” Ramachandran says.

Today, Syngenta offers basic and advanced training for seed treatment applicators at The Seedcare Institute facility in Stanton. Retailers practice how to treat seed properly for the best coverage, use accurate dosing and troubleshoot potential problems. They also learn the importance of product stewardship.

Can’t make it to Stanton? “Syngenta has a team of Seedcare specialists across the country who can visit your site,” says Joe Kuznia, Syngenta Seedcare platform lead at The Seedcare Institute.

Advancing seed treatment technology involves making sure a seed treatment consists of the right mix of ingredients, or recipe, for each crop and geography. “You need the right formulation so the seed treatment sticks and stays on the seed,” Ramachandran says.

“This requires coapplication of seed treatment products with crop-specific polymers.”

In-house seed-coating research capabilities at Stanton streamline this process. “We look at factors ranging from dust off to plantability to provide best results,” Kuznia says.

In the Pipeline

Syngenta continues to invest in research and development to create the next generation of seed treatments. The company hopes to introduce a new fungicide seed treatment that will contain the new a.i. picarbutrazox. Currently under regulatory review by EPA, the seed treatment — to be marketed as Vayantis® — will offer a new mode of action, providing protection from *Pythium* and *Phytophthora* in corn and soybeans. Plus, over the next five years, Syngenta hopes to launch a number of insecticide and nematicide seed treatments currently in its pipeline.

This is great news for Geske, who appreciates new solutions to offer growers in his area. “When my seed supplier announced the switch to the Syngenta Seedcare platform, a lot of its seed dealers — including me — were glad.”

Many crop production challenges can be managed with today’s advanced seed treatments from Syngenta. Think of a Syngenta seed treatment as an insurance policy, Weikel says. “It’s one of the few things you can count on in an unpredictable world.”

Left top: Pat Foley (left), Syngenta Seedcare key account lead, and Gary Geske (right), an independent seed treater, work together to maximize the benefits of Syngenta seed treatments for growers in the Enderlin, North Dakota, area. Right top: Wanderson Oliveira, a Syngenta Seedcare platform specialist, demonstrates the safety and stewardship aspects of Seedcare product packaging during product training at the Stanton facility.



40 Years of Innovation in Seedcare

For 40 years, Syngenta and its legacy companies have been on the forefront of seed treatment research and innovation, making deliberate, positive advancements in seed treatment technology. With novel active ingredients and crop-specific seed treatment recipes across all major crops, Syngenta is committed to improving germination, seedling vigor, plant stand and healthy root systems to get crops off to a great start. The history of Syngenta Seedcare, the world's No. 1 seed treatment provider, includes a long line of firsts for the industry.

1979 — Concep®, the first sorghum seed safener, is introduced.

1982 — Apron®, the first seed treatment fungicide to offer protection against downy mildew, enters the market.

1993 — Maxim® seed treatment fungicide, the first seed treatment to be labeled “Reduced Risk” by the EPA, is launched.

1994 — Dividend®, the first broad-spectrum systemic fungicide for cereals, receives registration.

1997 — Cruiser®, the first seed treatment insecticide, is launched globally.

2001 — Cruiser insecticide is introduced in the U.S. for use on cotton, sorghum and wheat.

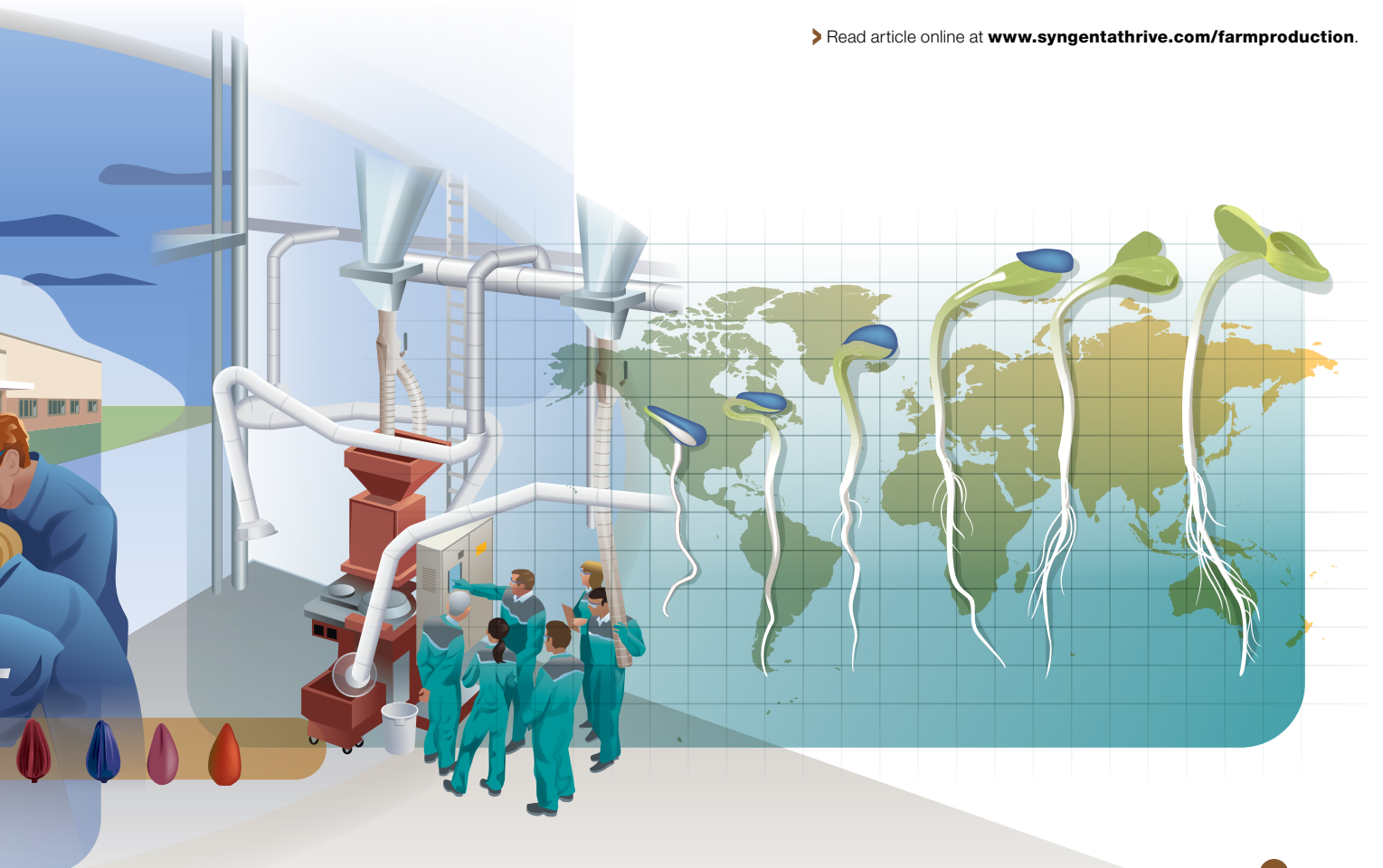
2003 — Cruiser Extreme® 250, the first insecticide/fungicide seed treatment for corn, enters the market.

2004 — Several products are introduced, including CruiserMaxx® Beans, the first insecticide/fungicide seed treatment combination for soybeans; Dynasty CST®, a seed treatment fungicide registered for use on cotton; and Dynasty® PD, the first seed-delivered fungicide for peanuts.

2006 — Avicta®, the first seed treatment nematicide, receives registration for use on cotton.

2007 — Syngenta opens the first Seedcare Institute in Stein, Switzerland.





2009 — Avicta Complete Corn, the first nematicide/insecticide/fungicide seed treatment for corn, is launched.

2010 — CruiserMaxx Rice, the first insecticide/fungicide seed treatment for rice, enters the market, and Avicta Complete Beans, the first seed treatment nematicide/insecticide/fungicide for soybeans, is launched.

2012 — Vibrance[®], the first fungicide from Syngenta specifically developed for use as a seed treatment, is introduced.

2013 — The first wave of registrations for vegetable crop seed treatments under the FarMore[®] Technology Platform umbrella receives EPA registration; Clariva[®] pn biological nematicide is introduced.

2014 — Bion[®] 500FS, a fungicide seed treatment for sunflowers and sorghum, is introduced.



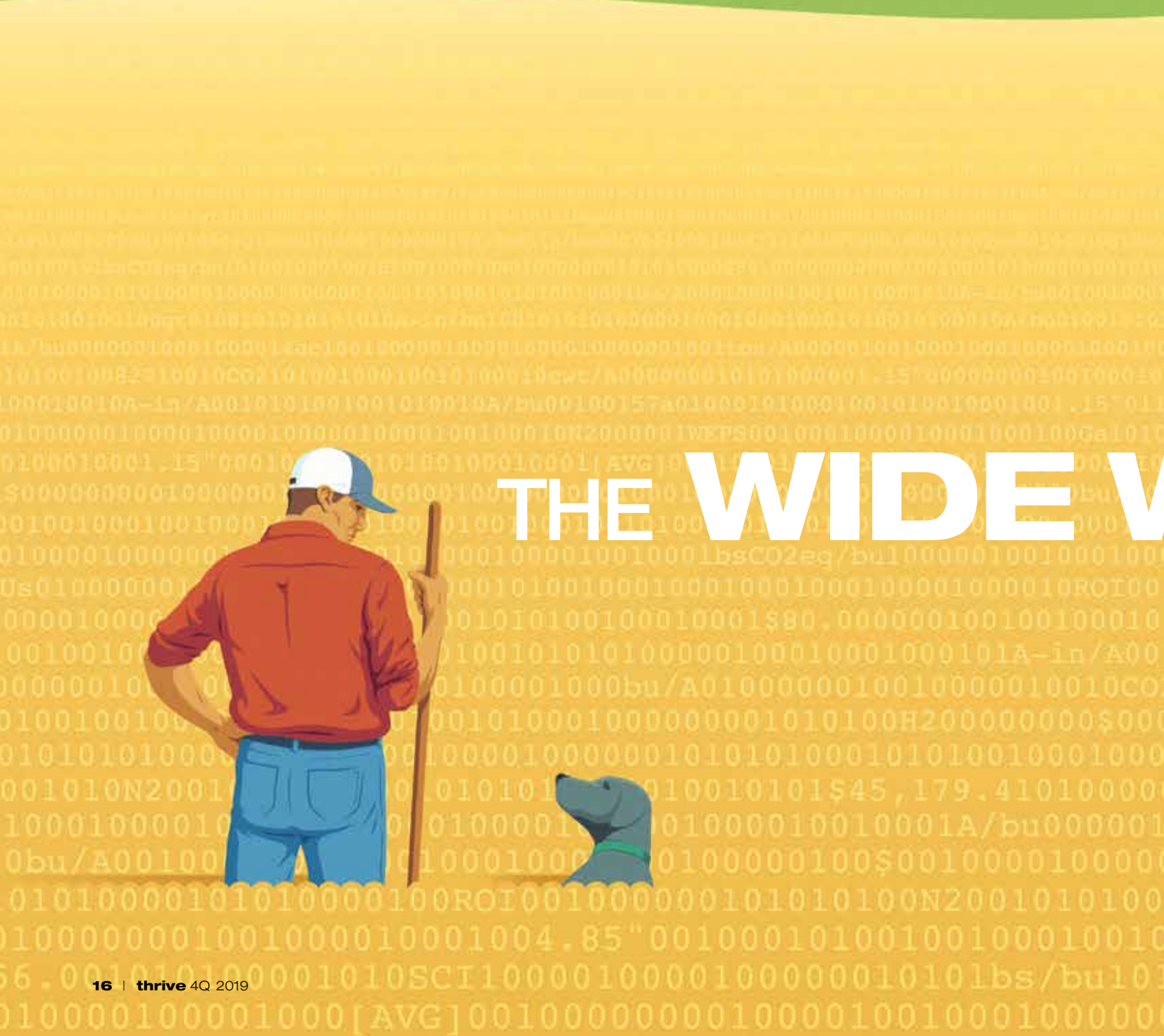
2016 — The Syngenta Seedcare Institute opens its expanded U.S. facility in Stanton, Minnesota.

2017 — Several products are introduced, including Clariva Elite Beans seed treatment, an easy-to-handle premix of Clariva pn nematicide and CruiserMaxx Vibrance seed treatments; Fortenza[®] seed treatment insecticide registered for use on corn and cotton; and Plenaris[®], a fungicide seed treatment for sunflowers.

2018 — Syngenta receives EPA approval for Vibrance[®] Trio seed treatment, a premix of three fungicide active ingredients for soybeans, and Vibrance Cinco seed treatment, which contains five fungicidal active ingredients and five modes of action for use on corn.

2019 — Saltro[®] fungicide seed treatment, which offers protection against sudden death syndrome and nematodes, receives registration from the EPA. Also in 2019, Epivio[®] Zn micronutrient seed treatment is available in rice to help prevent zinc deficiency.





THE WIDE V



WORLD OF DATA

Collecting data is easy. Knowing what to do with it presents a world of challenges and opportunities.

By Miriam Paulson

Illustrations by Chris Whetzel

TO go for a swim, you have two options: You can ease in or take the plunge. If it's your first time, you'll be cautious. But if your confidence is high, you'll dive right in.

When it comes to incorporating data management into a farming operation, it's much the same.

In the past decade, growers have seen an exponential increase in the number of data points available to them on their farms. Their equipment and high-tech tools are tracking data at every stage of the season. The magnitude of available information is overwhelming, especially for someone new to data management, so it's no surprise that 50% of data collected from farm equipment goes unused.¹

1. Market research, 2018 Stratus Ag Research.

“A lot of people have technology on their farms, but what are they really doing with it?” asks Brad Allen, a Syngenta AgriEdge® specialist. “First and foremost, operations should determine goals for data usage. Then, we need to focus on the collection and collaboration of data — making sure it’s easy to collect and manipulate — and then make sound decisions.”

Allen points out that if growers aren’t collecting quality data that’s easy to turn into profitable actions, it doesn’t matter how many screens of information they have in their cabs or how many different record-keeping programs they use. Growers who streamline their data collection and maintain quality control can more easily turn data into results.

DIFFERENT GOALS, DIFFERENT DATA, DIFFERENT RESULTS

AgriEdge, the whole-farm management solution from Syngenta, includes farm management software with features for seamless data transfers, record keeping, reporting and analysis. It’s a technology platform that helps growers link different technology and data sources within one tool for a 365-day, 360-degree view of their operations. Growers have different goals for their data, and AgriEdge offers the breadth of tools to meet each operation’s unique needs.

Planning for Profitability

In Newport, Arkansas, grower Jennifer James uses her data to make sure she maintains profitability on her rice, corn and soybean farm, H&J Land Company.

“We regularly enter our invoice prices in AgriEdge, so we’re able to track to the day, or even to the minute, what expenses are in the crop,” James says. “If we exceed our planned budget, we can quickly pull back or adjust other line items.”

At the beginning of the season, she bases her budget on expected market prices and records of inputs she’s used in the past. But unexpected seasonal challenges and down markets are unavoidable.

“Having the data behind my decisions helps me feel confident,” James says. “Even with changing prices, we can see what we need to make our budgets work.”

Having a plan in place has also allowed her to buy inputs in bulk to cut costs. She also says it’s a great way to avoid billing errors. In fact, James says they’ve recouped about \$40,000 in just three years, based on errors caught using the farm management software.

Regulatory Compliance

Cale Rogers is a ranch foreman on Portwood Farms, a pistachio and almond farm in Wasco, California. He says one of his biggest challenges is maintaining and proving regulatory compliance.

“We have to be prepared for everything — from an OSHA [Occupational Safety and Health Administration] walkthrough and timely product-use reports to maintaining the right hazardous-waste and restricted-materials permits and keeping my applicator’s license up to date,” Rogers says. “AgriEdge makes regulatory compliance a lot easier for me.”

Rogers and his staff enter data at the time of application. “I don’t have to dig through emails or paper copies to find our recommendations from two months ago or to try to remember what I sprayed on each field,” he says. “It’s really easy for me to monitor product limits.”

At the end of the month or year, Rogers can easily print and submit the necessary reports.

Better, Faster Decisions

Brandon Wilson, the farm manager at Davis Brothers Farms in Cunningham, Kentucky, has been using AgriEdge since he joined the farm in 2013. For this fast-paced corn, soybean and wheat farming cooperative, he needs to keep accurate accounting data so he can see exactly how much has been spent on a field-by-field basis.

“I can quickly assess values, which empowers me to make game-time decisions,” Wilson says. “I use that real-time dollar amount when making recommendations for inputs.”

For example, when comparing similar products — one that will cost \$3 per acre and one that will cost \$7 per acre — most growers review the probable yield bump. But with his historical data, Wilson can also see that the cheaper product has required an extra pass on a specific field in the past and may ultimately cost \$10 to \$13 per acre.

“I’ve found a lot of value in keeping up with data to make better decisions for the present and the future,” Wilson says.

COME ON IN, THE DATA’S FINE

Whether it’s in a notepad, Excel spreadsheet or farm management software, most growers and resellers are already tracking the right types of data, even if they don’t know how to use it.

Allen says a sales rep, an AgriEdge specialist or another trusted adviser can help growers get their data in order and determine next steps with the operations’ goals in mind. An easy first step is an annual review of general data for an input-to-output analysis. Then, they can move toward subfield analyses and decision-making.

“There’s a lot of noise in this space,” he says. “Find someone who’s going to help you drive profitability on your farm and who wants it to move forward.”

Allen confirms most growers ease into data management. “You’ll have to try things that may be out of your comfort zone, but not many growers are using every button or data point when they first start. It’s an evolution, and it’s never too late to start.” 🍀



PIPELINES AND PILOTS

In 2018, \$945 million was invested in startups creating on-farm digital agriculture tools, for a 65% increase year over year.¹ 2019 is on track to be another record year, as ag companies are eager to find the best tools for their customers. Syngenta is no exception.

“We’re always looking for great tools that our partners are or could be using,” says Aaron Deardorff, head of Digital Ag Solutions at Syngenta. “We want to continue enhancing the opportunities available through AgriEdge®, the Syngenta whole-farm management platform.”

Deardorff says it’s a fine balance between pushing boundaries while still ensuring functionality and viability in the marketplace.

To determine what tools to consider, the Digital Ag Solutions team combines feedback the technical support team receives with input from its Executive Business Council — a board of growers from across the U.S. — and certified AgriEdge partners, strategic retail partners approved to offer AgriEdge to their grower customers.

Once Syngenta identifies a potential technology or integration opportunity, it faces a rigorous proof of concept. If it passes, a pilot program will ensue. In pilot programs, Syngenta relies on strategic retailer and grower partners to determine market value and conduct trials.

“We look at new technology and integrations from every angle: the target region or geography, the customers who would use it, the relevant crops, the feasibility of integrating it with existing technologies, and so on,” Deardorff says. “It’s not uncommon for a project to make it to the proof-of-concept phase, or even the pilot

phase, then be pulled back because it didn’t ultimately bring value to the customer.”

Right now, Syngenta has several offerings in its digital ag pipeline, including a project combining sensor technology with drone technology for improved scouting along with a tool

“ We’re not far from a digital ecosystem where most of the tools — or at least the ones that succeed in the market — will be connected. ” — AARON DEARDORFF

combining crowdsourcing with artificial intelligence recognition for more accurate agronomic recommendations.

Syngenta Digital Ag Solutions is also tapping into its global resources. For example, the team is considering how software from Strider, a newly acquired Brazilian ag tech company, may enhance the capabilities of the current AgriEdge farm management software. If these solutions make it past the pilot stage and into growers’ hands, they will offer a seamless flow of data with existing Syngenta tools.

“Our ultimate goal is for all of a grower’s or retailer’s digital systems to connect,” Deardorff says. “We’re not far from a digital ecosystem where most of the tools — or at least the ones that succeed in the market — will be connected. We want to be a source that provides growers and resellers with a comprehensive data connection point, personalized service and the right product portfolio to help them succeed.”

1. AgFunder, 2018 AgFunder AgriFood Tech Investing Report.



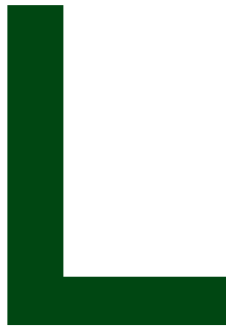
STOP SDS IN ITS TRACKS

A powerful new seed treatment from Syngenta promises to protect soybeans from sudden death syndrome early in the season to prevent late-season yield loss.

BY ERIN KOLSTAD | PHOTOGRAPHY BY MARK ZHU



With more stopping power against SDS and no plant stress, Salto-treated soybeans are healthier above and below the ground.



Like a lion lurking in the grass, bracing to pounce, sudden death syndrome (SDS) could be lying in wait in soybean fields — invisible until it's too late for growers to defend their yields. This devastating disease infects the plant early, but detecting infection before symptoms typically appear late in the season can prove difficult.

“SDS is a very emotional disease for growers because they’ve grown their soybean crop for months; and when those canopy symptoms show up in mid-to-late August, it’s very sudden,” says Dale Ireland, Ph.D., a technical product lead with Syngenta Seedcare™. “You could think you have a very good crop, and then suddenly the leaves become chlorotic and begin dropping off prematurely, which can significantly affect yield.”

Second only to soybean cyst nematode (SCN), SDS ranks as one of the most detrimental soybean diseases for U.S. growers in terms of yield loss. Each year, SDS destroys an estimated 25 million bushels of soybeans,¹ which is nearly \$245 million in yield loss for growers.²

“SDS is a unique disease with symptoms that occur typically in the late reproductive stage,” says Jason Bond, Ph.D., a professor and plant pathologist at Southern Illinois University. “However, what’s causing those symptoms is the pathogen hiding in the taproot that infected those roots soon after planting.”

That’s why the availability of a better, more powerful seed treatment from Syngenta that starts protecting soybeans from SDS at planting is such welcome news.

Upgraded SDS Protection

Saltro® seed treatment, which recently received registration from the U.S. Environmental Protection Agency, contains

THE SCORCH OF EARLY-SEASON STRESS

One of the most beautiful sights to a soybean grower is clean, uniform rows of green plants stretching for acres into the horizon. A healthy crop is often a source of pride as his or her neighbors drive down the road, admiring the results of diligent, season-long management. One of the best ways to end up with a uniform stand is to start out that way at emergence. The last thing growers want to do after carefully selecting their genetics is treat with a seed treatment that stresses soybeans and causes visible damage.

Phytotoxicity is a toxic effect on plant growth by a compound. The physical expression can manifest in many ways including, but not limited to, chlorosis (yellowing), necrosis (tissue death), stunted growth, loss of plant stand and even plant death.

Until recently, growers have only had one seed treatment option to protect against sudden death syndrome (SDS), ILeVO® seed treatment. Soybeans can have difficulty metabolizing the active ingredient in ILeVO, fluopyram, resulting in a situation that often leads to phytotoxicity on the cotyledons of ILeVO-treated soybeans. This development causes unnecessary stress on the plant during the critical early-growth stage that can affect yield potential. While soybeans typically “grow out” of these early signs of stress above the ground, the lasting impact on root development and yield potential can linger all the way through harvest.

“While ILeVO has good efficacy against SDS, it also

has a little baggage,” says Dale Ireland, Ph.D., technical lead with Syngenta Seedcare™. “ILeVO-treated soybeans may eventually appear to recover from the early-season plant stress above the surface, commonly known as the ‘halo effect.’”

However, Ireland notes that below the ground, a stunted root system can remain. “For a seed treatment to be effective, you want it to be efficacious,” he says. “But you also don’t want it to hold back, hinder or negatively impact any growth and development.”

Unlike ILeVO, Saltro® fungicide seed treatment — the new SDS offering from Syngenta — provides superior SDS protection without the stress, as well as robust activity against nematodes, including soybean cyst nematode (SCN).

While SDS- and SCN-resistant varieties help protect against these pests, the right seed treatment offers the added protection soybeans need to help reach maximum yield potential.

“If you’re a soybean grower, you shouldn’t have to give up early plant health to get SDS protection,” says Paul Oklesh, product lead with Syngenta Seedcare. “Until now, growers have had limited choices to

protect against SDS and nematodes. With Saltro, growers have access to an upgraded solution with more power to fight SDS and nematodes, without the stress.”

Unlike ILeVO, Saltro-treated soybeans do not show signs of stress caused by phytotoxicity, including stunting and reduced plant stands.



Treated with Saltro



Treated with ILeVO

the highly effective SDHI fungicide Adepidyn®. Starting at planting, Saltro will help protect soybeans from SDS pressure to preserve yield potential, without displaying the damaging side effects of phytotoxicity.

“For the first time, growers have a more powerful seed treatment option for protecting their soybeans against SDS and nematodes,” says Paul Oklesh, product lead with Syngenta Seedcare. “Unlike the status quo, Saltro does it all without exhibiting the effects of plant stress above or below the ground.”

Under high SDS pressure, Saltro also provides a statistically significant 3-bushel-per-acre yield increase over ILeVO® seed treatment.³ (See “The Scorch of Early-Season Stress,” page 22.)

The Cause of SDS

To evaluate the impact Saltro may have on the 2020 U.S. soybean crop, it’s important to understand the root cause of SDS. The fungal pathogen that causes SDS — *Fusarium virguliforme* — lives in the soil and infects soybean roots soon after emergence. Early planting, cool soil temperatures and high moisture levels can promote disease development.

Heavy rains and warm temperatures around soybean flowering may encourage foliar symptoms to appear. And, while the pathogen itself mainly stays in the roots, it produces a toxin that moves into the plant’s parts that are above the ground and causes foliar damage.

“There are a lot of *Fusarium* species that attack soybean and corn roots,” Bond says. “The reason why farmers and the industry are so concerned with this particular *Fusarium* species is it causes that foliar scorch late in the year with moderate to devastating yield losses.”

Being a Good Scout

While it’s too late to take action once SDS symptoms appear, careful ground scouting above and below the ground can help growers identify hot spots and prepare for the next time they plant soybeans.

Noticeable foliar symptoms of SDS begin with yellow spots between the veins of the outermost canopy leaves and spread into chlorotic interveinal leaf scorching. Valuable leaves then become necrotic and detach from the plant, leaving petioles still attached. Other symptoms include the inner stem pith remaining white, flower and pod expulsions, root rot, and cobalt-blue growths on the outer root surface.

The timing of SDS symptom appearance plays a key role in total yield loss. “If severe foliar symptoms appear in earlier growth stages, there is a greater chance for catastrophic yield loss because there is more time for defoliation and pod expulsion,” Ireland says.

Proactive Protection for SDS

When it comes to SDS, it’s important for growers to use all the tools available to develop an effective disease management program. This could include:

- **Planting fields without a history of SDS first.** Growers should plant fields with a history of SDS later because young soybeans are more susceptible to infection in the cool, wet conditions of early planting.
- **Reducing soil compaction.** Purdue University Extension notes that tilling in known compacted areas may reduce disease symptoms by allowing the soil to warm more quickly during the spring.⁴
- **Having soil tested for SCN.** SCN root feeding allows the SDS pathogen to more easily enter the roots and infect the plant, leaving soybeans more vulnerable to infection.
- **Planting SDS- and SCN-resistant varieties.** No soybean varieties are completely resistant to SDS, but partially resistant varieties are available. Because there is a known link between SCN and SDS, planting SCN-resistant varieties may also delay SDS onset and reduce disease severity.
- **Using an SDS seed treatment in combination with SDS-resistant varieties.** “With the right seed treatment protecting soybeans from early infection, growers can significantly reduce the risk of late-season expression of SDS or even completely eliminate it,” Ireland says.

Oklesh believes Saltro is that right seed treatment. “With more power against SDS and no early plant stress, Saltro will help soybeans finish the season stronger,” he says. “And the payoff for growers at harvest will be consistently higher yield potential. It’s definitely an upgrade in SDS protection for our customers.” 🌱

1. United Soybean Board, “Wanted for Yield Robbery: Sudden Death Syndrome.”
2. United States Department of Agriculture Economic Research Service.
3. Includes locations that exhibited 20% SDS incidence or more as measured by a local scientist. Syngenta Seedcare trials, 2015 to 2017, trial locations: AR, IL, IA, KY, MI, MN, TN, WI (a=0.1).
4. Purdue Extension, Field Crop Pathology, “Sudden Death Syndrome.”



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— PAUL OKLESH



Practical Solutions on Demand

Syngenta has developed technologies that capture and translate its agronomic know-how into easy-to-use digital formats.

Even the savviest techie can feel overwhelmed at an electronics store like Best Buy. New technologies stretch from wall to wall, TVs support countless streaming devices and displayed music systems are a far cry from the familiar CD player.

“Even if you buy the equipment, you’re not always sure how to use it when you get home,” says Dan Burdett, head of digital ag at Syngenta. “That’s why Best Buy offers the Geek Squad®.”

According to Burdett, agronomists have the technical know-how to perform a similar function for agriculture. “Almost four decades ago, the BBC broadcast a television

program about the computer,” he says. “At the start, it predicted how state-of-the-art computers might one day transform industries — factory automation, computer-aided design, airplanes and missile systems, a driverless tractor plowing across a muddy field.”

Today, those scenarios are commonplace — except for one. “I think one reason why we don’t see more driverless tractors is that agriculture has been missing that connection to help growers adopt new technologies,” Burdett says. “That’s why it’s so important for today’s retail agronomists to be able to serve as trusted advisers and be that missing link when it comes to digital technology.”

Jacob Ebbers (left), NK sales representative, helps Clint Matthews (right), seed sales manager at Agtegra in Aberdeen, South Dakota, glean the most agronomic knowledge from Syngenta digital agronomic tools.



Members of the Syngenta global digital agronomy team have two goals. First, they're developing digital solutions that make internal farming operations more efficient. "At Syngenta, we have 124 different crops planted across 5,000 acres in 94 countries," Burdett explains. "We want to make data-driven production decisions for those fields."

Second, they're offering those digital tools to Syngenta resellers who can use them to guide growers as they make production decisions for their farms. This year, Burdett's team has begun rolling out two digital tools: a seed selector tool and a seed analyzer tool, both designed to help reseller agronomists guide their growers in making seed selection decisions backed by reliable data.

Rows of Data

Clint Matthews is a seed sales manager at Agtegra Cooperative in Aberdeen, South Dakota. "I grew up on a farm and farm a little myself — and I have a lot of interaction with some local growers," he says. "In the Dakotas, we have variable weather and can be farming hilltops and low bottoms in the same field. One year, it's too wet, the next year it's too dry. We struggle with finding products that are really versatile."

When Matthews started to use the new seed selector tool, he was blown away by the tool's simplicity. "What's neat is being able to sit down with a grower and pull up that grower's specific field to get a recommendation on which product looks like it'll work best, based on a long history of weather data. It displays the recommendation in an easy-to-understand format."

For resellers who work with growers of all ages and technology-comfort thresholds, simplicity is a big benefit. "We have the guys who have been farming their whole lives and are getting near the end of their careers — and they're just not that interested in getting into that arena — right down to those who are just starting out and very tech savvy," Matthews says.

Even growers who aren't interested in diving into new technologies appreciate the access to this type of data in such an easily digestible format, he says. "If they can click a button and in five minutes, without any instruction, get a good summary of what will work well in their fields, most growers are willing to give it a try."

Digging Deep

While Matthews is looking forward to using the seed selector tool during his interactions with growers to get a "quick, on-the-fly recommendation," he's also excited about



"If they can click a button and in five minutes, without any instruction, get a good summary of what will work well in their fields, most growers are willing to give it a try."

— CLINT MATTHEWS

The new Syngenta seed analyzer tool helps growers make the best seed choices for each field.

the seed analyzer tool because of its ability to offer in-depth analyses.

"I'm kind of a data geek," he says with a laugh. "If you're selling seed and you're passionate about that, you like to understand the data. The seed analyzer is perfect for that. I can dig in and actually understand all these different trial data we've been collecting for a long time — like plant data and field data — and what happened and why."

With the seed analyzer, resellers can select a specific geography, the grower's soil type and the weather pattern to get the average of how a product performed in that situation across multiple plots. "When you look at a single trial, you can get variability that throws the data off. But with this tool, you can get more relevant information because you're looking at averages," Matthews explains.

These two tools share an important feature: practicality. "It doesn't make sense for us to bring in huge amounts of data from farms or equipment — or even from our research and development team — and expect farmers to translate that information into recommendations," Burdett says.

That's why the role of the agronomist is so important. It's also why Syngenta is focused on helping local resellers make the best agronomic recommendations, based on local data. 🌱 STORY BY ROBIN SUTTON ANDERS

A Sustainable Future

Syngenta has developed a far-reaching strategy to help farmers meet production challenges and adapt to shifting consumer expectations.

Following a half-year, worldwide listening tour with a range of stakeholders, including food companies, nongovernmental organizations (NGOs), consumers and policymakers, Syngenta is now focused on accelerating innovation with a renewed emphasis on sustainability. The goals? To help address the increasing challenges growers face around the world and to keep farming sustainable.

“Farmers today need to manage climate change, soil erosion and biodiversity loss, as well as changing consumer expectations and views on agricultural technology,” says Alexandra Brand, Syngenta chief sustainability officer. “There is a clear call for innovation and more action to address these challenges in ways where everybody wins — from growers to consumers and the environment.”

A New Strategy

Syngenta officially launched a new sustainability strategy in April. It aims specifically to improve the way farmers grow and protect crops and to find solutions that address today’s challenges, while anticipating tomorrow’s.

“Syngenta has always believed that sustainability is continuous improvement in three areas: environmental, economic and social,” says Jill Wheeler, head of Sustainable Productivity for Syngenta, North America. “We want growers to continue to realize benefits in all of those areas. Some of the biggest benefits will probably come in the social area, since we will be seeking greater input and acceptance from nontraditional stakeholders.”

Right now, the company is developing key performance indicators around this new strategy, asking fundamental questions including:

- Are Syngenta innovation investments enabling farmers to address evolving marketplace demands?
- Are they improving the company’s internal operations and also helping its suppliers?
- Are the innovation investments reducing the Syngenta carbon footprint?
- Do they lead to greater transparency?



“Once we have all of those guidelines, the change will flow from there,” Wheeler says.

Of course, Syngenta customers need to be able to solve their problems and make a profit, too, so attention will also be given to factors like stabilizing yield in the face of shifts in climate, reducing residue levels, and increasing the quality and nutritional value of crops. All these innovations will ultimately help Syngenta resellers and growers succeed in a changing marketplace.

Enhancing Stakeholder Collaborations

The new strategy’s accelerating innovation platform creates more opportunities for Syngenta to work with farmers, researchers and NGOs to help define what new product development will look like, says Steven Wall, Ph.D., Syngenta product safety sustainability lead.

The Nature Conservancy is among those NGOs, and the organization has worked with Syngenta for years. Under the new sustainability strategy, this relationship will become an even more significant global collaboration.

“This will involve taking the core expertise of Syngenta — research and development (R&D) capability and innovation

capability — and adapting that expertise to not only solve the problems that are facing growers around the world, but also to deliver benefits for nature and society at large,” says Michael Wironen, Ph.D., senior scientist in agriculture and food systems at The Nature Conservancy (TNC).

Three core themes underlie the collaboration — soil health, resource-use efficiency and habitat protection — and all the collaboration’s work will address one, if not all, of those topics.

“Soil health is something TNC has been concerned about for a long time,” Wironen says. “We’re just now beginning, partly through our collaboration with Syngenta, to expand this focus beyond North America into Latin America, Africa and East Asia.”

He cites two examples: “In China, through our collaboration with Syngenta, we’re looking at how diversifying crop rotation in the country’s potato-growing region can deliver benefits in pest and disease management, productivity, and soil health. In Kenya, we’re looking at smallholders who produce crops in the watershed that supplies Nairobi to help them manage water better and to invest in soil-health improvements that boost their productivity.”

A little closer to home in the Midwestern U.S., this soil initiative means looking at opportunities to help farmers increase the efficiency of their operations in nutrient management, irrigation and land management. The effort also means helping farmers take advantage of Syngenta tools, like its Land.db® farm management software.

Helping Growers Everywhere

The increased attention paid to sustainability will start right from the beginning of development work at Syngenta. “The sustainability focus is going to be embedded in our R&D processes, so by the time many of our products get to market, they will have an explicit sustainability benefit,” Wall says.

Striving for lower residues in crops is one example growers may notice. “That’s from feedback we received during our listening sessions,” he says. “Further reducing residues without impacting productivity could make it easier to access and trade in various markets.”

Over time, growers will see more and more products with environmental profiles that more food companies are excited about, Wheeler says. “We’re helping prepare growers to better meet the changing expectations coming from downstream, as well as providing products that will be better tailored to the demands of those customers.”

This collaboration — with farmers, academia and environmental groups — in researching and developing sustainable solutions and reporting transparently on the progress and outcomes of these investments is what growers will increasingly need, Brand says. “We will put our innovation more strongly in service of helping farms become resilient to changing climates and better able to adapt to consumer requirements, including reducing carbon emissions and reversing soil erosion and biodiversity decline.”

STORY BY SUZANNE BOPP

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Good Stewards

Syngenta properly stewards its products so that growers will have the tools they need for years to come.



Crop protection and seed trait technologies help growers maximize yields while also minimizing damage from insects, weeds and diseases. But avoiding any unintentional impact on growers, their families, their communities and the environment requires proper stewardship of these beneficial tools.

As an industry leader, Syngenta recognizes its responsibility to steward its product portfolio for the protection of the environment and the safety of all. For growers, these efforts help ensure the longevity of much-needed technologies.

“Through research, collaboration and education, we go above and beyond to demonstrate our commitment to product stewardship and sustainability,” says Patsy Laird, stewardship manager at Syngenta. “We develop our own

stewardship guidelines, support product stewardship education across the country, and work directly with farmers, applicators and resellers to make sure they understand all the best management practices relating to using our products.”

Enhancing Stewardship of Trusted Tools

Dicamba has been a crucial tool for growers since it first received registration from the U.S. Environmental Protection Agency (EPA) more than 50 years ago. Since dicamba products were registered for post-emergence, over-the-top use on dicamba-resistant cotton and soybeans, EPA has required applicators to take extra precautions to make sure the herbicide stays on target weeds and away from sensitive crops and other plants.

In 2019, Syngenta introduced the market's first premixed, residual dicamba-based herbicide: Tavium® Plus VaporGrip® Technology, combining dicamba and S-metolachlor to provide contact activity and residual control. Before launching the product, Syngenta conducted research and collaborated with industry partners to ensure proper stewardship.

"We used research to specifically write the Tavium label in a manner that provides good stewardship, in addition to the greatest efficacy possible," says Dane Bowers, technical product lead of herbicides at Syngenta.

For instance, the label requires applications be made within 45 days after planting (through the V4 stage) in soybeans and within 60 days after planting (through the six-leaf stage) in dicamba-tolerant cotton. This earlier application window maximizes delivery of S-metolachlor to the soil surface for optimum residual activity and benefits weed control because of the early timing on smaller weeds. Applying Tavium in this early window allows for good weed control in soybeans and cotton before many nontarget plants emerge.

To make sure applicators maximize the in-season benefit of this technology, Syngenta provides extensively researched material for training customers on tank-mix guidelines, nozzle requirements and appropriate weather conditions to focus the treatment on the crop.

"We wanted to provide as thorough a training as possible so our customers understand Tavium and all of the factors involved in keeping it on the target crop," Bowers says.

Carroll Moseley, Ph.D., senior environmental stewardship and policy manager at Syngenta, worked closely with Bowers and external state agencies to make sure the Tavium training not only meets everyone's needs, but also helps ensure the long-term availability of this important weed management tool. "We have a responsibility to do what we can to protect customers using our products as well as the environment," Moseley says.

Bowers believes that the leadership Syngenta shows in dicamba stewardship will help products like Tavium remain trusted tools for years to come.

"Because of the rapid increase in herbicide-resistant weeds, Tavium is a critical tool for growers to control weeds and to help maximize yields," Bowers says. "It's extremely important that we steward these products correctly and that anyone applying these products adheres to the label."

Pioneering Sustainable Energy Production

Stewarding traits, like Enogen® corn enzyme technology, is also important to Syngenta. The company initially developed Enogen to support the ethanol industry, which helps boost the U.S. economy and reduce carbon emissions for a cleaner environment.

Enogen grain contains alpha amylase, an enzyme that efficiently converts starch into energy in the form of sugar when activated. Not only does the enzyme make ethanol production more efficient, it also results in more readily available energy when fed to dairy or feedlot cattle.

Syngenta established a stewardship program to simplify proper management of the crop and ensure the grain reaches the intended channels. Even though Enogen corn is fully approved for food and feed use in the U.S., some industries do not see the benefit from its increased amylase. As good neighbors, Syngenta voluntarily devised an innovative stewardship program to track Enogen corn to its intended destination.

One piece of the program is an online system that includes GPS tools for mapping growers' Enogen fields, border rows and storage facilities. The system also helps growers track how much Enogen corn they plant and harvest, and assists with pinpointing delivery to the contracted location. Similar to Tavium, training is an important component of the Enogen stewardship program.

"Every acre of Enogen corn is contracted, so we know exactly who is growing the grain, and we spend a lot of time training those growers," says Chris Cook, head of stewardship at Syngenta Seeds. "We teach growers why stewardship matters and how to comply with our process. We also provide supplemental support materials throughout the year."

Cook says the success of Enogen and its stewardship program bodes well for development of future sustainable technologies. "We showed the industry that managing and tracking a new trait is possible on a large scale," he says. "This opens the door for Syngenta and the industry to look differently at what else can be developed."

A Foundation for Future Innovation

With global temperatures and populations on the rise, growers need agricultural innovations now more than ever as they grapple with the challenge of feeding more people under more difficult weather conditions. By fostering innovation that protects the environment and those who work in the industry, the Syngenta stewardship team is ready to do its part to help growers meet this challenge.

"We really believe that stewardship is important," Laird says, "and we're proud of our work on it." 🌱

STORY BY CHRISTINA BOODÉE

"We showed the industry that managing and tracking a new trait is possible on a large scale. This opens the door for Syngenta and the industry to look differently at what else can be developed."

— CHRIS COOK



Ripple Effect

Syngenta proudly sponsors the fourth season of “FarmHer on RFD-TV,” which features women working on farms, on ranches and in agricultural labs. *Thrive* catches up with a former scholarship winner to learn about his career so far.

SPONSORSHIPS

Season Four of “FarmHer on RFD-TV” Begins

This fall, “FarmHer on RFD-TV” has returned with Syngenta as the presenting sponsor for a fourth season. Syngenta has supported FarmHer through its sponsorship since the first season of the acclaimed show.

“The FarmHer movement amplifies the voices of the women who are shaping the future of agriculture,” says Wendell Calhoun, communications manager at Syngenta. “We understand that the contributions of people from various backgrounds and experiences strengthen our company and the industry as a whole. Syngenta is proud to continue our support of the show.”

During its run, the show has explored the stories of women all over the U.S. agricultural community. Marji Guyler-Alaniz, the show’s host and the movement’s founder, has given viewers a look at the vital impact of women on farms, on ranches and in agricultural labs across the country.

“I always look forward to the opportunity to showcase these inspiring ag stories,” says Guyler-Alaniz. “In season four, we’ll shine a light on the women in ag, including a mother-daughter duo leading a sustainable family farm in Michigan and Katharine Girone, the winner of the 2018 #RootedinAg Contest.”

To view #RootedinAg Spotlight segments from the show, go to www.syngentathrive.com/farmher.



Inset photo: Debbie Bischer (left) and her daughter Rita Herford (right), grow amber waves of grain on their Michigan farm. Main photo: Katharine Girone, a 4-H coordinator in Tazewell County, Illinois, and 2018 #RootedinAg Contest winner, still frequently visits her family farm in Varna, Illinois.



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Investing in the Future

A scholarship recipient is already on a path to make important contributions to agriculture.

Mitch Roth earned a national Syngenta scholarship in 2015, while pursuing a doctorate in genetics at Michigan State University. Four years later, he's a post-doctoral research associate in the plant pathology department at the University of Wisconsin–Madison.

Roth recently reflected on what the scholarship has meant to him.

"Earning the scholarship provided validation that the work of early-career scientists is valued by large agricultural institutions," he says. "With support from the Syngenta scholarship, I was able to focus less on funding school and more on my research at the lab bench."

The contributions of Roth and other scholarship recipients, in turn, can help farmers and agribusinesses in the future.

"We want students to know that in addition to their universities, companies like Syngenta support them and their work," says Syngenta Communications Manager Wendell

Calhoun, who adds that scholarship winners could also be potential employees or future business partners of Syngenta.

The Accelerating a Generation Syngenta Scholarship, formerly the Syngenta Agricultural Scholarship, began in 2014, when the company combined multiple crop-specific scholarships into one program. The scholarship committee determined that a single program recognizing the contributions of students from multiple disciplines would have a more significant impact, Calhoun says.

Syngenta has since awarded a total of \$20,000 in scholarships each year. It awards eight \$1,000 regional scholarships and two \$6,000 national scholarships, with one of the national awards going to a student pursuing a bachelor's degree and the other to

a student working toward a master's degree in crop-related disciplines. So far, scholarship recipients have pursued degrees at colleges in 18 different states.

Roth is currently researching the interactions between soybean and the fungal pathogen *Sclerotinia sclerotiorum* at the University of Wisconsin–Madison. He earned a doctorate in genetics, with a dual major in plant pathology, in May 2019.

"I'm interested in understanding the genetics of a compatible interaction that results in disease and the genetics of an incompatible interaction that results in disease resistance," he says. "I hope to apply this knowledge to soybean lines to improve disease resistance in soybeans."

He says he'd like to be a university professor one day.

"I enjoy research, teaching others about research and mentoring others through their research projects," he says.

Syngenta will launch its 2020 Accelerating a Generation Scholarship at the end of October. For more information on the 2019 scholarship winners and the 2020 competition, go to www.syngenta-us.com/scholarships. 🌱

STORY BY LYNN GROOMS

"Earning the scholarship provided validation that the work of early-career scientists is valued by large agricultural institutions."
— MITCH ROTH



Left: As a Michigan State University graduate student in 2015, Mitch Roth received a national Syngenta scholarship at the master's level.



Today, as a postdoctoral research associate in the plant pathology department at the University of Wisconsin–Madison, Roth discusses growth patterns and phenotypes of the plant pathogenic fungus *Sclerotinia sclerotiorum* with Meareg Amare, a doctoral candidate in cell and molecular biology.



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