

Growing Together

>>> 3Q | 2016

# thrive<sup>®</sup>

## Forward Thinking

**Whole-Farm Management Program Empowers Retailers, Growers**

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**THE GOOD GROWTH PLAN TACKLES GLOBAL FOOD SECURITY**

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**WHY TOP-END SEEDS ARE WORTH THE INVESTMENT**

**syngenta<sup>®</sup>**



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By Lacy Gallagher

## 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](http://www.syngentathrive.com).

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ON THE COVER From left to right: Growers Logan Coates, David Coates and Landon Coates walk the family farm in Weakley County, Tennessee. The Coateses depend on the Land.db software from the AgriEdge Excelsior program to manage their six irrigation pivots. Photo: Hollis Bennett

THIS PAGE Green winter wheat flourishes at Lobmeyer Seed Farms in Garden City, Kansas. Photo: Jason Ryman

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

Please send them to [thrive@syngenta.com](mailto:thrive@syngenta.com). For more information, visit the Syngenta U.S. website at [www.syngenta-us.com](http://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.



# A Road Well-Planned

The most successful journeys in life start with a plan. Farming is no exception. The conversations growers have with trusted advisers like you—mapping out what worked well the previous year and deciding which new technologies to adopt—lay the foundation for a productive season.

At Syngenta, we offer you the resources to enhance your recommendations to growers. Our scientists are delivering new seed, seed-treatment and crop-protection innovations to the market at an unprecedented pace. But we realize these solutions are not one-size-fits-all, and agriculture is too diverse to paint every acre and grower the same.

That's where the strengths of our field force and AgriEdge Excelsior®—our multi-crop, whole-farm management program—come into play. With the goal of maximizing returns on every field, this program facilitates collaboration between our teams. Together, we're able to benefit growers by creating integrated crop plans that combine the Syngenta portfolio with your products and services. The program's Land.db® farm management software also helps ease the grower's pain points of farming from the desk by connecting digital platforms and automating data entry, while safeguarding privacy every step of the way. Additionally, Land.db helps growers generate reports that buyers, lenders, auditors and regulators increasingly require.

**“Our scientists are delivering new seed, seed-treatment and crop-protection innovations to the market at an unprecedented pace.”**

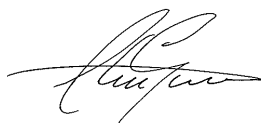
In this issue of *Thrive*, retailers from different regions across the country explain why AgriEdge Excelsior has become an integral part of their offer. From simplifying record keeping to supporting their precision agriculture technologies, the program is helping these retailers solve complex business and farm-management challenges.

This issue of *Thrive* also provides a progress report on The Good Growth Plan—our strategy for sustainably feeding 9 billion people by 2050—and looks ahead to 2017 and beyond to preview the role new genetics, chemistries and unmanned aircraft systems will play in agriculture.

While adoption of technologies is expected to accelerate, collaborative relationships on the farm will continue to define our industry. We recognize that resellers like you are at the heart of these relationships. With the right programs, products and people in place, Syngenta stands ready to join your conversations with growers and help you chart the best course forward.



STEVE GOMME



**STEVE GOMME**  
National AgriEdge Lead  
Syngenta, North America



**WATCH NEW VIDEO** For an in-depth interview with Steve Gomme, check out the new video posted to the *Thrive* website ([www.syngentathrive.com](http://www.syngentathrive.com)).





# What's in Store

Find news, events and product developments—and learn how to cast your vote in the #RootedinAg contest.

## NEWS AND EVENTS

### > New FarmHer Series on RFD-TV

Syngenta recognizes the critical role women play in agriculture every day. From driving tractors on the farm to discovering innovations in the lab, women are using their muscles and their minds to make major contributions to an industry that feeds more than 7 billion people.

To honor these women, Syngenta is the presenting sponsor of “FarmHer on RFD-TV,” a new television series that starts airing in September. As envisioned by FarmHer founder Marji Guyler-Alaniz, each episode will tell stories of real women, living mostly in rural America, who, as the FarmHer theme states, “love the land, care for the community and feed the people.”

“I founded FarmHer in 2013 to begin changing the image of agriculture—to include women in that image through





Women are making important contributions to agriculture in a variety of roles.

photographs and stories,” says Guyler-Alaniz, who’s also a professional photographer. “This partnership with RFD-TV and Syngenta takes what I started with FarmHer through still imagery and launches it to the next level.”

For more information on the FarmHer online, social and soon-to-be television community, go to [www.farmher.com](http://www.farmher.com). Also, visit [www.syngentathrive.com/community](http://www.syngentathrive.com/community) for a sneak peek at some of the remarkable women RFD-TV will start featuring this fall.

## >> Make Your Vote Count

Syngenta thanks everyone who entered the #RootedinAg contest and shared how their agricultural roots are helping their families and communities thrive. A panel of judges has narrowed the field of competitors to five finalists—each of whom has received a mini touch-screen tablet.



Now, we need your vote to help us determine who will be the grand prizewinner of a \$500 gift card. Also at stake is a \$1,000 donation from Syngenta to the winner’s favorite local charity or civic group.\* Just go to [www.syngentathrive.com](http://www.syngentathrive.com), click on the #RootedinAg link under Special Features, and vote for the entry you think is most deserving. Online voting ends Sept. 15, 2016, with Syngenta announcing the grand prizewinner in October.

For more information on the #RootedinAg contest and its Official Rules, visit [www.syngentathrive.com](http://www.syngentathrive.com).

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

## TRADE SHOWS AND CONFERENCES

As the 2016 harvest season gets closer, stop by our booth at either of the shows listed below to find out what’s new at Syngenta:

### AUGUST 2016

30–Sept. 1 Farm Progress Show  
Boone, Iowa

### SEPTEMBER 2016

13–15 Husker Harvest Days  
Grand Island, Nebraska



**PRODUCT UPDATES**

**> Trusted Spider Mite Control Available for Soybeans**

Already trusted by fruit, nut and vegetable growers, Agri-Mek® SC miticide/insecticide is now available to treat spider mites in soybeans. Agri-Mek SC contains the active ingredient abamectin, a true miticide that provides exceptional knockdown and long-lasting residual control of spider mites in soybeans. Upon application, abamectin penetrates the leaf and is rapidly absorbed into the tissue, controlling mites on both the upper and lower leaf surfaces and preventing widespread damage. To learn more, contact your local Syngenta representative.



**>> Enhanced Seed Treatment for Cotton**

Since 2006, cotton growers have witnessed the outstanding early-season disease protection available with Avicta® Complete Cotton nematocide/insecticide/fungicide seed treatment, a combination of separately registered products. Now, Syngenta has further developed this seed treatment to offer growers top-of-the-line defense against early-season diseases and stellar protection against insects and nematodes.

Avicta Elite Cotton Plus with Vibrance® seed treatment combines seven active ingredients that deliver extended protection against a broad spectrum of seedborne and soilborne diseases, including *Rhizoctonia*. A combination of separately registered products, it also helps cotton growers stay one step ahead of insect pests like tobacco thrips (limited control), Western flower thrips, cotton fleahoppers (suppression) and cotton aphid. Using a proven mode of action with ideal systemic activity and soil mobility, this seed treatment will help growers achieve optimized root health and consistent yield stability year after year. For more information on Avicta and other cotton products, go to [www.syngenta-us.com/crops/cotton](http://www.syngenta-us.com/crops/cotton).



**NEW PRODUCTS**


**> Online Agronomic Resources for Growers**

Syngenta has launched the Tools to Grow More agronomic resource for sugarbeets and enhanced the designs of the soybeans and wheat resource pages to give customers convenient, online access to the latest product and application information. Because these resources are mobile-friendly, resellers and growers can use their phones and tablets to view the pages in the field.

Syngenta has divided each Tools to Grow More crop resource into three categories: start strong, grow strong and yield strong. In each of these categories, users will find information and solutions for key seasonal topics, including variety selection, disease protection, insect control and herbicide resistance



Matt Dolch, a Syngenta sales manager, stands beside a bulk container of Golden Harvest corn in Beaver Crossing, Nebraska.



The early morning sunshine brightens a field of cotton in Greenville, North Carolina.

management. The resources are essentially one-stop agromonic shops, from planting through harvest.

For more information about season-long solutions, contact your local Syngenta representative or go to the specific crop page on [www.syngenta-us.com](http://www.syngenta-us.com).

## >> New Syngenta Corn Hybrids for 2017

Syngenta will offer 69 new corn hybrids, including Golden Harvest®, NK® and Enogen® corn, for the 2017 growing season. Each hybrid is a product of the Y.E.S. Yield Engineering System™, which enables Syngenta scientists to tap into a global pool of genetics to create hybrids that match U.S. growers' individual field needs.

The new hybrid class features high-performing Agrisure® traits including:

- > 46 hybrids available as single-bag E-Z Refuge® options, providing an added level of grower convenience
- > 14 Agrisure Artesian® hybrids, helping growers maximize yield when it rains and increase yield when it doesn't
- > 18 hybrids with the Agrisure Viptera® trait, offering comprehensive, above-ground insect control that results in more high-quality grain
- > 16 hybrids with the Agrisure Duracade® trait, featuring a unique mode of action to control corn rootworm

Syngenta also will offer three new Enogen hybrids. Enogen corn enzyme technology, an in-seed innovation exclusively from Syngenta, is the industry's first and only biotech corn designed specifically to enhance ethanol production.

For more information about Syngenta corn hybrids or to find a local Syngenta Seed Advisor™ or NK retailer, visit [www.syngentaseeds.com](http://www.syngentaseeds.com).

## PIPELINE

### Syngenta Names Newest Cereals Herbicide

Syngenta recently announced Talinor™ as the name of its newest herbicide in cereals. It contains bicyclopyrone, the company's latest active ingredient in cereal herbicides, and bromoxynil. Together, these two active ingredients will deliver excellent stand-alone control of resistant and other tough-to-manage broadleaf weeds, including kochia and Russian thistle. Syngenta anticipates Environmental Protection Agency registration in late 2016, with first use targeted for the 2017 growing season.

"Talinor is a selective, post-emergence herbicide developed to control broadleaf weeds in all varieties of barley, spring wheat [including durum] and winter wheat," says Gigi Arino, cereal herbicides product lead at Syngenta. "Talinor is an important tool for controlling troublesome weeds, particularly those that have become resistant to ALS-inhibitor and auxin herbicides."

Upon registration, Syngenta anticipates Talinor will control more than 50 broadleaf weeds. Conveniently packaged with CoAct+™ adjuvant to deliver optimum performance, Talinor provides excellent tank-mix flexibility and is an ideal mix partner with other grass herbicides for one-pass grass and broadleaf control. Additionally, it is absorbed quickly through foliage for excellent rainfastness and offers a wide application window from the two-leaf to pre-boot stage of the crop. Talinor will be an ideal fit for growers in North Dakota and will also be available to growers in the surrounding Northern Plains states, as well as the Pacific Northwest.





# Enhancing Biodiversity

The interconnectedness of agriculture and the natural world is at the heart of the commitment by Syngenta to help biodiversity flourish as part of The Good Growth Plan. More than **a third of all crops** depend on pollinators for propagation, and the global value of pollinators is roughly **\$221 billion** each year. At the same time, most farms include marginal, less productive land, which can provide crucial habitats for wildlife. The Syngenta global Operation Pollinator program supports growers in their efforts to convert marginal farmland into corridors of vegetation that provide habitat and foraging environments for pollinators and other wildlife. Through The Good Growth Plan, Syngenta has committed to enhance biodiversity on **more than 12.3 million acres** globally by 2020.

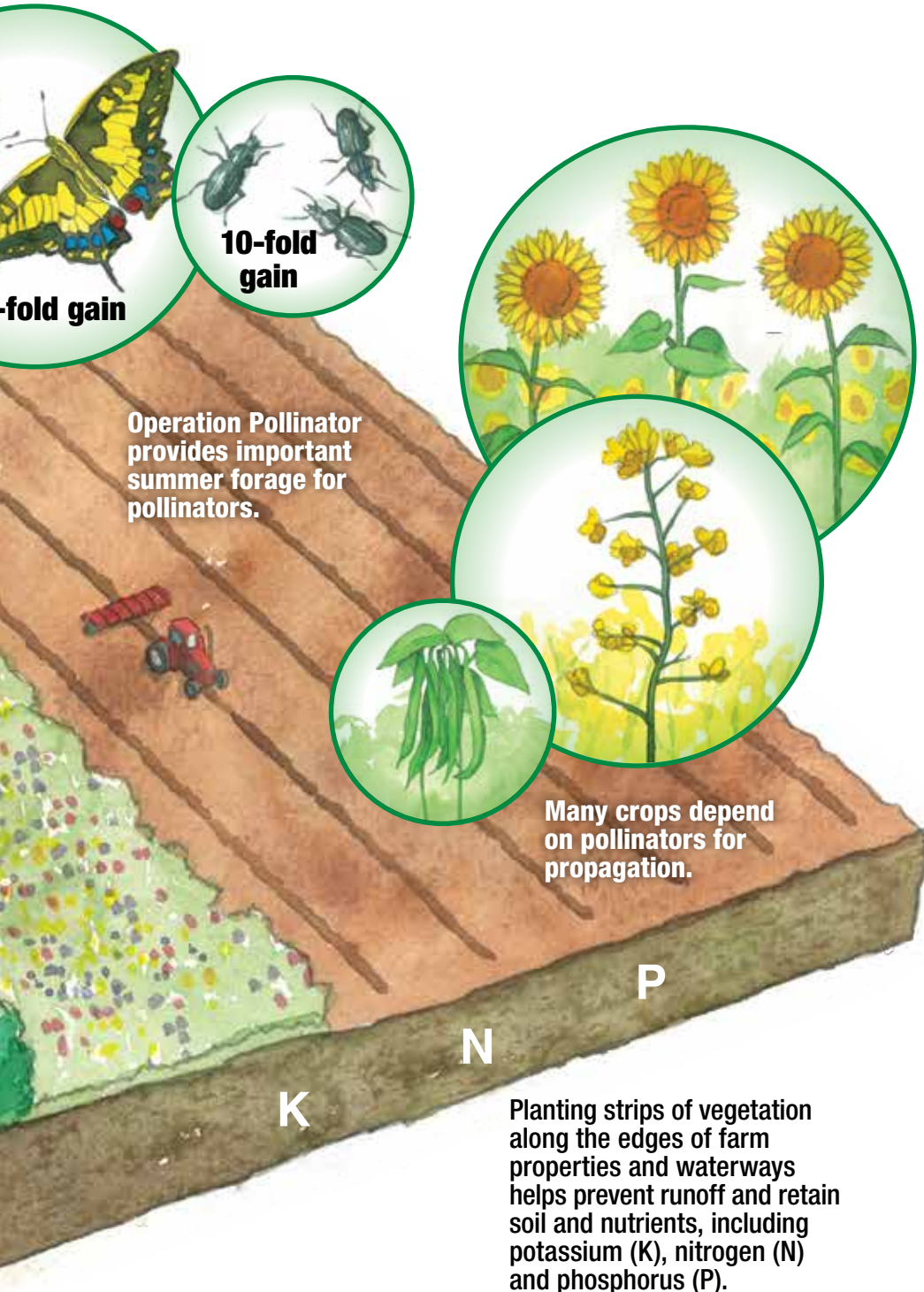
Man-made pollinator habitats show significant increases in pollinator numbers within three years.

Up to 600% increase

12

Habitat corridors connect animal populations, improving genetic variation and evolutionary adaptation.





10-fold gain

10-fold gain

Operation Pollinator provides important summer forage for pollinators.

Many crops depend on pollinators for propagation.

K

N

P

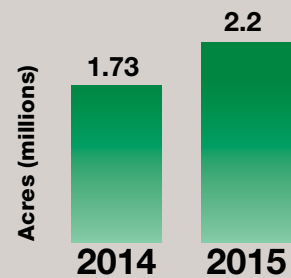
Planting strips of vegetation along the edges of farm properties and waterways helps prevent runoff and retain soil and nutrients, including potassium (K), nitrogen (N) and phosphorus (P).

## Operation Pollinator

### ENVIRONMENTAL FOOTPRINT

Started more than 15 years ago, Operation Pollinator creates habitats for pollinating insects and wildlife by planting field margins with local wildflowers across 30 countries in Europe, North America, Latin America and Asia. These pollinators play a key role in the ag economy.

### GLOBALLY IMPACTED ACRES



Scientists believe that for every 3 acres of marginal land planted to benefit pollinators, 100 acres will experience a significant positive impact.

### BUSY BEES

Bees alone contribute nearly

**\$19 billion**

to the value of crop production in the U.S. each year.

### FLOWER POWER



Operation Pollinator advises growers on land management and helps pair native wildflower species to specific farm needs.



# A Peerless Pepper

Syngenta unveils a new green pepper that offers growers, grocery-store retailers and consumers benefits they can see—and taste.

“**M**y vision for Overgreen peppers is to change the green pepper market—from what people think green peppers should look like right down to how they eat them,” says Rachel Broadbent, product lead of peppers and tomatoes for Syngenta, North America. It’s an ambitious goal, but one that Broadbent and others involved with the Overgreen project believe is within reach.

Overgreen peppers from Syngenta are the product of a 20-year breeding program using traditional techniques. This oftentimes tedious process involves selecting peppers with the desired traits, breeding them, selecting offspring with the desired traits and repeating these steps until a stable plant emerges.

Kevin Cook, global lead of open-field pepper research and development for

Syngenta, began working on the Overgreen project at its halfway point 10 years ago. “You have to be patient,” Cook says as he explains the breed, select and repeat process over a period that spanned two decades. “This is a conventionally bred product, and getting from the original concept for Overgreen to the plant we have today was a lengthy process.”

## Benefits All Down the Line

Vegetable breeders develop new varieties to benefit growers, distributors/retailers or consumers. Occasionally, with a little luck and a lot of hard work, a product like Overgreen comes along with something for all three groups.

Growers can expect several advantages with Overgreen peppers. Once established in the field, the plants produce a

Above: Overgreen peppers can keep their deep green hue for more than three weeks after harvest—and have a mild flavor without a sour aftertaste.



heavy foliage cover, which protects the fruits from sunburn. In testing trials, fruits also show very good tolerance to blossom-end rot. Additionally, their thicker walls and heavier weight help reduce the bruising that often occurs during harvest and on the packing line. The most highly anticipated benefit of Overgreen to growers—the one that inspired its name—is the extraordinary length of time in which the fruits maintain their deep, dark color.

Chlorophyll is the chemical in plants that allows them to perform photosynthesis and gives them their green color. Over time, chlorophyll degrades, causing red anthocyanin pigments to become visible and the peppers to turn red. It's the same process that makes leaves change color in the fall.

“The reason Overgreen peppers stay greener longer than others is that every cell in them has twice the chlorophyll as a normal pepper and the chlorophyll molecules are twice as big,” Cook explains. As a result, growers have a longer window for harvesting their crop, opening new market opportunities and aiding in labor management.

The color persistence is also reason for excitement on the retail side. Overgreen peppers can hold their deep green hue for more than three weeks after harvest, giving grocery stores more time to get the peppers off the produce rack and into shopping carts.

But the most broadly experienced benefits of Overgreen will be to health-conscious consumers, who are demanding more nutrient-dense vegetables in their diets. The dark green is consistent throughout the wall of the pepper, allowing its bold color to stand out in mixed recipes. The pepper is slightly crispy, providing a unique texture. From a flavor perspective, Broadbent reports that taste panels prefer Overgreen to standard green bell peppers. People who have tasted Overgreen often describe the flavor as milder and without the sometimes sour aftertaste of a regular pepper. Broadbent's 6-year-old daughter Lily has confirmed these results.

“I've been a little insistent in telling people who say they don't like raw green peppers to try Overgreens,” Broadbent says, “but nine out of 10 times, they end up really enjoying them. That's how I got my daughter to try the peppers, and now she loves them.”

Broadbent is especially happy about her daughter's new favorite snack because of its additional health benefits. Overgreen peppers contain nearly two times more lutein—a chemical important for eye health—and vitamin A than other bell peppers.

### The Road Ahead

So far, Syngenta has sold Overgreen seed to a key integrated pepper producer. Headquartered in Florida, this vegetable operation grows a variety of peppers, green beans, yellow squash, zucchini, cucumbers, eggplant and



A field of Overgreen peppers flourishes in Georgia.

tomatoes on more than 14,000 acres of farmland, and has packing and cooling facilities in Florida, Georgia, Tennessee, North Carolina, Arizona and Mexico.

“They're excellent farmers, and we've been working with them to gauge market acceptance and better understand yield potential and other production parameters,” says Broadbent.

Most retailers who have seen and tasted the Overgreen pepper are excited by its prospects on the broader market. Hopes of consumer acceptance remain high; and while only sales can confirm its acceptance, buyers and merchandisers appear optimistic, Broadbent notes.

Agricultural markets can be fickle, and success for any new product is never a sure thing. But Cook believes that Overgreens will have more people snacking on green peppers and including them in recipes than ever before. “Once people see and taste them, I'm not sure they'll want other green peppers anymore,” he says. 🌱

STORY BY CHRIS HARRELL

**“My vision for Overgreen peppers is to change the green pepper market—from what people think green peppers should look like right down to how they eat them.”**

—RACHEL BROADBENT

# Bird's-Eye View

Drones are poised to have a major impact on farm production as a relatively inexpensive way to monitor crops.

If you're not involved with drone technology now, you probably will be soon. Agricultural sources familiar with drones—also known as unmanned aircraft systems (UAS)—agree that they will become a common sight on farms in the future.

"I liken it to the early days of precision agriculture when yield monitors were first used," says Chris Blome, an Alden, Iowa, farmer, Syngenta Seed Advisor™ and owner of Premier Technologies. "Fast forward 15 or 20 years from those early days, and almost every combine has a yield monitor plus GPS and guidance. I think drones are on the leading edge of technology, and in five to 10 years, we will see them everywhere."

Small, agile drones are a much cheaper way to survey crops and gather images than using aircraft or satellites, and they're faster than scouting fields on foot. Drone images are usually high quality and can provide precise details about crops with georeferencing. Ag Connections is currently working toward incorporating the ability to export drone-obtained pictures into its Land.db® farm management software, available from the Syngenta AgriEdge Excelsior® program. Upon integration into the software, this capability will offer growers yet another layer of information for farm data analysis to help improve crop yields.

Expectations are high for the potential economic impact of drones in agriculture. Analysts anticipate that drones—along with all the accompanying equipment and software—will generate 100,000 jobs in the U.S. and \$82 billion in economic activity between 2015 and 2025, according to a Bank of America Merrill Lynch Global Research report published last fall.

## FAA Regulations Apply

The Federal Aviation Administration (FAA) recently issued its final regulations for commercial use of drones. These FAA regulations divide drone users into "Fly for Fun" and "Fly for Work" categories. Based on these rules, the FAA considers most drone use on a farm as Fly for Work, which may surprise some growers who own drones.

"FAA has taken a position that using drones for checking on farm fields is a commercial purpose and requires registered aircraft and licensed operators," says John Dillard, attorney at OFW Law in Washington, D.C.

Fortunately, the new regulations don't require a pilot's license to operate a drone for work. Instead, the FAA is requiring a Remote Pilot Airman Certificate, which

requires passing an aeronautical knowledge test at an FAA-approved knowledge-testing center. In addition, the pilot must be at least 16 years old and vetted by the Transportation Safety Administration. To learn more about the certificate, visit [www.faa.gov/uas](http://www.faa.gov/uas).

Drone operators who already have a FAA pilot's license must complete an online training course about drones and then apply for a remote pilot certificate.

The FAA regulations now in effect for commercial users operating a drone under a Section 333 exemption, include a 400-foot altitude limit for flights without operational approval, a 55-pound aircraft weight limit, a maximum speed of 100 mph, daytime operation only, flights within the remote pilot's visual line of sight only, no flights over people, and no use of drones within 5 nautical miles of airports. For further information, visit [www.knowbeforeyoufly.org](http://www.knowbeforeyoufly.org).

To date, the FAA hasn't made enforcement of the commercial-use rules for growers a priority. Dillard says he's heard of the agency contacting a few farmers with

**"It's a good idea for growers to become knowledgeable about drone technology now, because it's reasonably priced and familiarity will help them keep up with the technology as it continues to evolve."**

— ERNIE CHILCOTT



ILLUSTRATION: KEVIN HAND



a cease-and-desist order, but no enforcement actions or fines.

Because the FAA is charged with keeping airways safe and preventing accidents, Dillard suggests growers should stay abreast of FAA regulations. In addition, they should manage any potential liability through insurance, employee training and common sense when using the technology.

Regulations for recreational or hobbyist use are less complex, but they do include many of the same flight requirements as commercial use. Last winter, the FAA mandated registration of recreational drones, which requires a \$5 fee.

### **Drone Technology Advances**

Farmers ready to purchase a drone will find a robust marketplace. Drone types and components range from \$750 for entry-level models up to \$25,000 for top-of-the-line systems. Those most popular among growers cost between \$1,500 and \$5,000, Blome says.

Businesses offering drone services to growers usually buy the high-end models with near-infrared cameras and software to download data. Service providers like crop consultants use this technology to turn field imagery into tangible information for farmers.

"Interpretation of the data will probably require a third party," says Ernie Chilcott, technical services lead at

Syngenta. "I don't foresee growers having a lot of extra time to work with this information in season."

In a previous role, Chilcott helped evaluate UAS service companies for potential future commercial applications. At its research and development field test sites, Syngenta has selected the technology company Pravia to handle drone imagery of crops grown by Syngenta researchers this summer. Pravia meets FAA regulations and will send the data to Syngenta for internal use. Like growers, Syngenta expects that an easier, more accurate way to regularly monitor crop health and yield will be very beneficial, Chilcott says.

It's clear that drone technology has the potential to facilitate crop management even more in the not-so-distant future. For example, some drones already have thermal sensors to detect stress in corn before visual signs appear, and on the horizon is the use of the aircraft for spot applications in the field.

"It's a good idea for growers to become knowledgeable about drone technology now, because it's reasonably priced and familiarity will help them keep up with the technology as it continues to evolve," says Chilcott. 🍀

STORY BY KAREN MCMAHON

Nothing in this article should be construed as legal advice. Readers should read and understand all applicable laws and regulations and seek counsel if necessary.



# PLAY all the





# ANGLES

Even when commodity prices are low, the right seeds help line up the season for success.

By Miriam Paulson



# S

ame story, different year: Commodity prices are low, with little change expected in the forecast. To make ends meet, some growers may consider rolling the dice and cutting seed costs with lesser-traited products. But they should proceed with caution, notes Dwight Bostwick, Ph.D., head of North America corn breeding projects at Syngenta.

“The cost of seed has definitely increased over the past 10 to 12 years,” he says. “Yet seed cost still only represents 15 to 20 percent of the total cost to grow corn or soybeans. Seeds are a small portion of a grower’s total input cost, but they play a vital role in the success of a season.”

To help growers assess the value of soybean varieties and corn hybrids from a research-driven company like Syngenta, *Thrive* posed the following true or false statements to industry experts:

## 1. Genetics and plant breeding are the same across all companies.

**False.** Joe Byrum, Ph.D., head of soybean product development at Syngenta, says that while other seed companies see plant breeding as an art form, Syngenta views the process as a complex math problem. “We are utilizing first-class, data-driven analytics to identify the best potential outcomes,” he says.

Each year, breeders start with hundreds of thousands of potential new inbred lines. Like most seed companies, Syngenta selects only 1 percent of these lines to move further through the development cycle. But its data-rich Y.E.S. Yield Engineering System™ speeds up the process and makes it much more efficient and reliable.

“The Y.E.S. Yield Engineering System replaces some of the luck involved in discovering a new line with science,” Byrum says. “We can use historical data to simulate the outcome of millions of potential choices and select a refined set of results. This accelerated process creates a focused

pipeline for breeders and enables them to efficiently determine the genetic potential of superior offspring.”

Through this process, the annual genetic yield gain of NK® Soybeans has increased to three times the historical annual average yield gain.

“NK Soybeans continue improving year after year,” says grower Kenneth Wuertz of Cardington, Ohio. “If I compare four years ago when we had decent weather to a more recent year when we had bad weather, the more recent yields are better. It’s clear Syngenta is continuing to boost genetics.”

## 2. Any hybrid or variety that makes it to market will perform on my field.

**False.** In addition to lacking the strongest genetic backgrounds, lower-priced, less-researched seeds most likely haven’t undergone stringent testing. Syngenta tests its genetics in varying environments for wide-area adaptation and consistency, before offering them to growers commercially.

“Once Syngenta breeders narrow the set of potential hybrids and varieties, we evaluate that remaining 1 percent under various agronomic practices and environmental conditions over several—at least four—years,” Bostwick says. “We’re searching for consistently high-performing hybrids and varieties across a wide array of environments. But we’re also looking for those hybrids and varieties that can produce ‘racehorse yields’ in a particular geography or environment.”

Out of hundreds of thousands of potential new hybrids and varieties evaluated each year, only the best—typically a few dozen—make it to market.

“By the time a hybrid or variety is available for growers to plant in their fields, we know it has wide-area adaptation with local confidence,” Byrum says. “Our products perform well across geographies, but we also can pinpoint exactly where they have the greatest potential to work the absolute best.”

Syngenta takes a scientific approach to collecting environmental data from targeted geographies, resulting

Left to right: Grower Kevin Brown, Syngenta Representative Brian Langeland and Seed Advisor Ralph Pabst confer on the early-season progress of Brown’s corn in Sanborn, Minnesota.



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



in better placement information. Using this information, Syngenta representatives can select the hybrids and varieties with maximum yield potential and environmental defense for a specific area.

Grower Charles Homolka of Central City, Nebraska, says he relies on his Syngenta Seed Advisor™ to help him determine which Golden Harvest® corn hybrids to plant on his acres. “He keeps me informed so I have an idea of what yields to expect and what hybrids to plant,” Homolka says. “He lets me know what might be a better fit for my ground.”

### 3. **Corn trait stacks can pay off, even in good years.**

**True.** Traits vary. Some protect plants from pests, like insects. Others optimize a hybrid’s ability to handle stresses, like drought. For traits like these, growers may not see quite as much of an economic benefit in a year when there is limited insect pressure or drought.

However, Bostwick says, “On average, across multiple years, the benefit of these traits certainly outweighs the cost—even in years without insect pressure or drought.”

Other traits complement management strategies, such as weed-control or resistance-management programs, by improving efficiency or reducing their overall cost. These trait stacks offer an immediate, in-season advantage for growers year in and year out.

Syngenta uses optimization tools to speed up the process of integrating traits. That means growers have quicker access to game-changing traits in seeds.

### 4. **The seller behind the seed makes a real difference.**

**True.** Yes, a grower can purchase seed from almost anyone who chooses to sell it, but the process can lack important elements. Selecting seed is the most significant decision of the year. An honest, knowledgeable relationship with a trustworthy reseller is important.

“Our Syngenta Seed Advisor, Ralph Pabst, guides us quite a bit,” says grower Glen Eischen of Springfield, Minnesota. “If the product isn’t going to perform well in our environment, he won’t recommend it for our farm. He’s a great asset to us.”

Located in nearby Sanborn, Minnesota, Pabst feels a strong sense of duty to his customers. “I’m proud to be selling Syngenta seeds,” he says. “My customers are my neighbors and friends, and it’s very important to me to get my recommendation right.”

Pabst is part of an extensive network of Syngenta Seed Advisors and retailers who back NK and Golden Harvest seeds. These advisors and retailers can help growers determine the hybrids and varieties most appropriate for their fields.

## Diversify and Thrive

Syngenta aims to provide corn growers with the right genetics and traits specific to their growing needs. A key component to this is a diverse hybrid portfolio.

“With Syngenta, growers have access to genetic diversification,” says Dwight Bostwick, Ph.D., head of North America corn breeding projects at Syngenta. “We encourage growers to plant multiple hybrids for risk mitigation. Additionally, our broad portfolio provides some price variation to help growers keep seed costs manageable and maximize their return on investment, regardless of their management practices and yield target for each of their farms.”

Within each maturity range, Golden Harvest® and NK® Corn brands offer multiple hybrids recommended for broad environmental conditions. This means growers won’t end up “putting all of their eggs in one basket,” Bostwick says. By planting hybrids with varying genetic backgrounds and trait options, growers can protect themselves against unforeseeable environmental factors. It also allows growers to build personalized packages that meet their budgets.

“On one end of the spectrum, we have fully loaded hybrids with the newest traits and elite genetics,” Bostwick says. “While on the other end, we continue to offer high-performing hybrids that have proven performance over a number of years.”

In some cases, an older hybrid with fewer traits—yet one that has shown proven yield performance across multiple years—may reduce the price by as much as 20 percent to 30 percent, compared to the premium associated with a brand-new, fully traited elite hybrid.

Syngenta is unique in its broad offering of corn seed—from basic hybrids to moderately traited to fully loaded. By selecting hybrids from a spectrum of genetics and traits, growers can diversify their seed portfolio for a stronger return on investment.

To help with those recommendations, a large team of experts further backs the network. Syngenta sales representatives and agronomists readily offer in-field, local support and expertise to growers. This guides growers to get the best value out of their seed for the greatest returns.

“NK and Golden Harvest seeds are worth the investment,” says Pabst. “The genetics are second to none, and the trait packages and seed treatments are better than any others you can find. Growers looking to cut costs can be assured that the prices are quite competitive.”



**TO LEARN MORE** about Syngenta hybrids and varieties, visit [www.syngentaseeds.com](http://www.syngentaseeds.com).



# A World of

The Good Growth Plan is making important progress on feeding a growing population while also protecting the environment.

By Darcy Maulsby



Corn is a crop  
that helps feed  
millions of people  
around the globe.



# Difference

Too often, agriculture is overlooked in pivotal discussions of key topics ranging from conservation to food security to economic development. But Syngenta has undertaken an ambitious, unprecedented effort, The Good Growth Plan, to help make sure agriculture has a strong voice in the U.S. and around the world.

“One of The Good Growth Plan’s biggest successes is allowing us to influence conversations and highlight modern ag’s contributions to ecosystem services, hunger relief, climate-change mitigation and more,” says Jill Wheeler, head of sustainable productivity at Syngenta.

Launched in September 2013, The Good Growth Plan is the company’s strategy for making

progress on the goal of sustainably feeding 9 billion people by 2050. The Good Growth Plan outlines six measurable commitments to achieve by 2020 to help address global food security challenges. More than two years into The Good Growth Plan, more than 3,600 farmers and many organizations have been working with Syngenta to demonstrate and measure what’s possible for 21 crops, as well as the people and environments of 42 countries.

“No one had undertaken a project of this scope before, so we knew going into The Good Growth Plan that it would be a big challenge,” Wheeler says. “It’s exciting to see successes begin to build.”

## One Planet, Six Commitments, Measurable Progress

The Good Growth Plan addresses the biggest challenges facing agriculture today, including the sustainability of farming and the prosperity of rural communities. So far, The Good Growth Plan is achieving the following goals.



### 1. Make crops more efficient by increasing the productivity of the world's major crops by 20 percent without using more land, water or inputs.

"To test and measure what's possible, we've created a network of reference farms across crops and regions in our key markets," Wheeler says. "These farmers are working with our field experts to trial new solutions and raise productivity." In 2015, the global network covered more than 1,000 reference farms and just under 2,600 benchmark farms. For 2015, the global average productivity increase on reference farms rose 2 percent versus the comparable benchmark farms.



### 2. Help biodiversity flourish by enhancing biodiversity on more than 12 million acres of farmland globally.

In the past 35 years, biodiversity has declined by more than a quarter due to population growth, habitat destruction and other factors. Two years into The Good Growth Plan, Syngenta has established biodiversity projects in more than 30 countries, impacting nearly 4 million acres. In the U.S., Syngenta is preserving biodiversity through Operation Pollinator, which boosts the number of pollinating insects on commercial farms by creating habitats tailored to local conditions. Syngenta has partnered with R.D. Offutt Company, the largest potato grower in America, for instance, to plant underutilized acreage on the corners of the pivots with regional wildflower seeds. With nearly 1,200 acres, this project is creating environmentally diverse habitats and increasing the number of pollinators. (See "Biodiversity Breakthrough: Potato Grower Creates Pollinator Haven," page 19.)



### 3. Rescue more farmland by improving the fertility of nearly 25 million acres of farmland on the brink of degradation.

In the past few years, Syngenta has run demonstration projects in many countries, often in partnership with local universities or nongovernmental organizations, to show growers what can be achieved on fragile land when sound practices are adopted to produce better yields. In 2015, these programs impacted nearly 4 million acres of land, bringing the two-year cumulative total to nearly 6 million acres.

"In Brazil, for example, we've partnered with The Nature Conservancy on the Greener Soybean Project [Soja Mais Verde], which helps growers comply with new government measures to restore forestland previously cleared for farming," Wheeler says.

Also, Syngenta worked with the United Nations to launch a Soil Leadership Academy in October 2015 to combat soil degradation. "We held a session to discuss what policies can help foster improved soil health," Wheeler says.



### 4. Help people stay safe by training 20 million farmworkers on safe product use, especially in developing countries.

"When Syngenta comes out with a new crop protection product, we expand our safety training program," says Wheeler, who adds that continuing education is also important. Certified applicators who treat seed with Avicta® seed treatment [corn, soybeans or cotton in the U.S.], for instance, receive a refresher course every three years. The reach of various safety training programs from Syngenta exceeded 10 million people in the first two years of The Good Growth Plan.

## PROGRESS AFTER TWO YEARS

### Make crops more efficient

2%

global average  
productivity  
increase



### Help biodiversity flourish

4 million

acres of farmland  
impacted



### Rescue more farmland

5.9 million

acres of farmland  
impacted





**BIODIVERSITY BREAKTHROUGH:**

# Potato Grower Creates Pollinator Haven

A unique partnership with America's largest potato grower is promoting the biodiversity that's vital to pollinators and agriculture.

R.D. Offutt Company, which grows up to 60,000 acres of potatoes each year, is turning nearly 1,200 acres of buffer cropland in Minnesota and the Dakotas into havens for pollinators. "Build it and they will come," says Vince Restucci, director of procurement and business technology for R.D. Offutt Company. "The biodiversity plots are like a juice bar for pollinators."

Since 2015, R.D. Offutt Company has established plots in the corners of potato fields where pivot irrigation systems don't reach. These plots are part of Operation Pollinator, a research-based program from Syngenta that boosts the number of pollinating insects on farms by creating specific habitats tailored to local conditions and native insects.

Syngenta, Pheasants Forever and flower seed producer Applewood Seed Company helped R.D. Offutt Company select



Colorful wildflowers growing near a potato field in Minnesota help attract pollinators.

the right mix of wildflowers and native plants to attract a variety of pollinators, including monarch butterflies and honey bees. Not only are these plots helping pollinators, but they are also beautifying the area. "I've been really surprised by the community's interest and positive response," Restucci says.

The strong business relationship Syngenta has forged with R.D. Offutt Company for more than a decade has helped the Operation Pollinator partnership thrive, adds Marc Rinke, a district manager with Syngenta. "Doing what's right for the environment is a long-term priority for Syngenta and those we serve."



**5. Empower smallholders by reaching 20 million small producers and enabling them to increase productivity by 50 percent.** These small stakeholders—who are located primarily in Asia, Africa and Latin America—often have 5 acres or fewer, Wheeler says. In 2015, Syngenta delivered products, know-how and training that reached 17.2 million smallholders, up from 15.3 million in 2014.



**6. Look after every worker by supporting fair labor conditions throughout the entire supply chain network.** In 2015, the Fair Labor Program from Syngenta was implemented in the Philippines and launched in China. "By the end of the year, the program covered 84 percent of our seed supply chain," Wheeler says. "We remain on track for 100 percent by 2020."

## We're All in This Together

Though The Good Growth Plan represents a significant investment for Syngenta, the company is committed to measuring and sharing its progress so the industry as a whole can benefit. "The Good Growth Plan will enhance our understanding of what makes crop production more efficient," Wheeler says. "Each year, we'll report our progress on all six commitments and publish detailed information on what we've learned."

Partnerships will continue to power the progress of The Good Growth Plan, Savinelli adds. "We're all in this together. Working with each other helps everyone succeed." 🌱

**FOR MORE INFORMATION** about The Good Growth Plan, visit [www.goodgrowthplan.com](http://www.goodgrowthplan.com).

Help people stay safe

**10.4 million**

people trained



Empower smallholders

**17.2 million**

smallholders reached



Look after every worker

**84%**

of seed supply farms are now in the Syngenta Fair Labor Program



# Ahead of the Game

Retailers nationwide outshine the competition with AgriEdge Excelsior management solutions.

By Lacy Gallagher



In a private office specifically designed for agronomic advising, an ag retailer projects Land.db® farm management software on a 50-inch screen and enters key variables relating to a grower's farm to test different crop input choices. Meanwhile, the grower intently watches the screen, which shows him the dollars-and-cents impact his seeds, crop protection and other agronomic decisions will have on his farm's potential crop performance and bottom line.

Similar scenarios are playing out more frequently, as an increasing number of farm suppliers are offering growers the ability to enroll in AgriEdge Excelsior®, the Syngenta whole-farm management program that includes Land.db. In this article, three retailers from different parts of the country describe their experiences with the program. Even though their stories are diverse, they all share a common thread—using innovation to help solve complex business and farm management challenges.

## Overhauling Operations

In 2012, Farmers Elevator and Exchange in Monroe City, Missouri, hosted a retreat featuring AgriEdge® Specialist Brad Koch. Growers who attended the gathering and heard Koch speak agreed the benefits of the program looked strong, but they said they'd rather not spend more time at their computers. They'd prefer to have their retailer securely input data from their farms.

Today, the locally owned co-op feed and agronomy company has Adam Grove, a certified AgriEdge partner, doing just that. He works with 18 AgriEdge Excelsior growers whose land represents two-thirds of all the acreage the company services. To make Grove's job easier, field records from John Deere and Case New Holland machinery flow seamlessly into the growers' records within the Land.db software.

In addition to supporting these growers, Grove, who is also Farmers Elevator and Exchange's agronomy operations manager, handles all the





**“Land.db has become our entire record-keeping system. ... Every work order we process is done through Land.db.”**

**— ADAM GROVE**



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

Adam Grove of Farmers Elevator and Exchange works in the Land.db program.

More than  
**90%**  
of growers who enroll  
in AgriEdge Excelsior  
stay in the program.

company's agronomic operation and service through Land.db. This means that even those customers not enrolled in the AgriEdge Excelsior program benefit, because of the company's improved operational efficiency.

"Every job my operators perform is done through

Land.db," says Grove. "Land.db has become our entire record-keeping system on all chemical and fertilizer orders, as well as the bridge samplings for our variable-rate fertilizer. Every work order we process is done through Land.db."

In total, Grove has more than 40,000 acres—every field the company has ever serviced—mapped in Land.db. With this approach, the company, which was founded in 1919, has simplified its record keeping and replaced binders of handwritten notes with an efficient, intuitive electronic system. Because a computer now analyzes the data and completes the calculations, this system has decreased both the risk of human error and the amount of paperwork operators must fill out every day.

In the long run, using the software to manage operations helps Farmers Elevator and Exchange organize and plan more effectively. For example, the company is able to anticipate more than half of its customers' spring fertilizer needs in the winter. As a result, when a grower is ready to make an application, the fertilizer is available, and a work order is just a click away.

"With AgriEdge Excelsior, we went from being a retailer of commodities to a farm management partner," says Gary Carr, agronomy and sales manager at Farmers Elevator and Exchange. "That differentiates us from other retailers in the area and gives us a chance to be one step ahead of the competition."

### **Building Trust and Relationships**

Since he was 10 years old, Shane Johnson, agronomist with Ag Tech in Stockton, Illinois, has known his Syngenta sales representative, Mike Porter. Johnson's father, who has been in ag retail for almost 40 years, has had the same representative. "That relationship with Mike has been phenomenal," Johnson says.

With Porter and the area AgriEdge Specialist, Adam Cowser, Johnson is able to offer AgriEdge Excelsior and the program's Land.db software to customers of Ag Tech, a family-owned, full-service retailer with seven locations across southern Wisconsin and northern Illinois.

"When you're comfortable working with the people around you, things tend to go smoother," Johnson says. "The technology component in AgriEdge Excelsior is all about communicating back and forth. You're trying this. I'm trying that. The three of us work through different approaches together to figure out the best way to accomplish the grower's goals."

Like other retailers, Johnson has established trust with his grower customers. Offering AgriEdge Excelsior to those whose operations are a good fit increases that trust, Cowser says. "Retailers see the benefit of AgriEdge Excelsior because it gives them another opportunity to have in-depth conversations with a grower," he says. "By using Land.db, retailers are able to take the relationship another step forward and provide better service."

### **Complementing Precision Ag**

Chuck Burlison, Certified Crop Adviser, with Helena Chemical Company in Sharon, Tennessee, has worked in ag retail for 29 years. His current managerial/sales role enables him to spend one-on-one time with growers; for most of them, he recommends the AgriEdge Excelsior program.

"I've been in this industry for a long time, and I've seen record-keeping programs come and go," he says. "The Land.db software provided by AgriEdge Excelsior is rock solid. It's not a come-and-go thing. You can hang your hat on it."

Burlison ties the software to AGRIntelligence®, a precision-ag offering from Helena.

"The Land.db record keeping fits AGRIntelligence like a glove," he says. "I just mold those two programs together and bring them to my customers as one offering. Keeping things in order—what you did to this field or that field and how you treated it differently—gives you a much cleaner record of what is happening on a field-by-field basis."

Burlison's customers David and Pam Coates of Coates Farms, LLC, agree. Located in Weakley County, Tennessee, they grow a mix of corn, soybeans and wheat on their 2,500 acres. They joined the AgriEdge Excelsior program a few years ago when their sons, Logan and Landon, graduated from college and returned to the family farm. To expand their operation, the family decided to invest in irrigation systems.

Today, Coates Farms has six irrigation pivots. With Land.db, they're able to map the optimal placement of irrigation pivots. The software also allows them to electronically connect the pivots directly to the server, so the Coates can use the information in their production records to figure out what irrigation regime works best.

"Information from Land.db clearly shows us the profitability of installing center pivots in our fields," says David Coates. "As a result, we have raised our production and added additional pivots as the opportunity arises."

Additionally, the family uses Land.db to analyze data relating to yield-mapping, fertility, chemical sprays, hybrid selection and variable-rate seeding. "We're building complete production plans for customers like the Coates with AgriEdge Excelsior and AGRIntelligence," Burlison says.

For the past three years, Coates Farms has either won or placed near the top of the Weakley County National Corn Growers Association's National Corn Yield Contest for dryland and irrigated corn.

"They've really embraced the program and used it to its full advantage all the way through the process," says Burlison. "Now, it's paying off for them with higher yields—year in and year out." 🌱




## AgriEdge Excelsior Excels

AgriEdge Excelsior®, the Syngenta whole-farm management program, helps simplify the complexities of modern farming. It combines secure data management across digital platforms with innovative product choices and trusted on-farm service.

With a growing customer base across 14 million acres and a customer retention rate greater than 90 percent, AgriEdge Excelsior continues to deliver outstanding value to growers seeking to enhance the way they manage their farms through digital technology and services. It also provides complementary technology and services that help retailers bring additional value to growers.

“AgriEdge Excelsior has proven to be a great collaboration tool for retailers, because it supports their precision ag services,” says National AgriEdge Lead Steve Gomme. “Our team of more than 45 AgriEdge Specialists across 48 states is excited to continue collaborating with retailers and growers to meet the agronomic and business needs of farming now and into the future.”



Left to right: Chuck Burlison of Helena Chemical Company and Cory Gilbert of Syngenta look at data in Land.db while at David and Pam Coates' farm in Weakley County, Tennessee.



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



# The Path to Protection

To balance environmental protection with agricultural and food security needs, cooperation is crucial.

**W**hen most people think of the Endangered Species Act (ESA), they're probably inclined to recall its celebrated successes—the bald eagle, for example, or the peregrine falcon. But that's not the whole story. Since its inception 43 years ago, ESA has actually listed some 1,600 species, and only 29 of those species have recovered and been delisted. Also, the habitats for 70 percent of those endangered species are found on private land, often the vast expanses owned by farmers and ranchers, which puts those landowners at legal risk over how they use their land and sometimes leads to confrontations and court battles.

## Challenges With ESA

Some of the challenges are found in the law itself, says Ryan Yates, the American Farm Bureau's director of congressional relations. "The U.S. Fish and Wildlife Service is statutorily required to *list* species, not statutorily required to recover them," he says. "While that's a laudable goal, the service has largely focused its efforts on the listing side of the equation."

Another problem is the web of lawsuits—many filed by environmental interests—that now largely controls the implementation of ESA. "ESA has morphed into a litigation-driven model that really punishes those who are practicing conservation and land management at the local level," Yates adds.

The volume of ESA-related litigation is tremendous and a drain on all involved parties, including the government, environmental groups and often agriculture, says Dan Campbell, Syngenta team lead for regulatory affairs. "With the many new, innovative product registrations Syngenta brings, the environmental activists sue the Environmental Protection Agency over the registration, because they feel the agency hasn't fulfilled the obligations of the Endangered Species Act. That's having a huge impact on our ability to innovate—and that's a major impact on agriculture."

## Protecting Pollinators

One of the most active discussions around ESA right now involves the monarch butterfly. Monarch populations are declining by some 9 percent annually, and the species has been proposed for listing. "A lot of people say, since we've been so efficient in controlling milkweed in the fields, we've removed a lot of the food sources," says Caydee Savinelli, Ph.D., pollinator and IPM stewardship lead for Syngenta. "There's debate whether or not that's true. But the bottom line is if we increase milkweed and other nectar plants, it helps the monarchs."

To help do that—and avoid a listing under ESA—farm groups like the American Farm Bureau are looking at opportunities to work with multiple sectors to enhance conservation efforts, says Paul Schlegel, director of environment and energy policy for the American Farm Bureau. "We can help inform growers about the importance of the migratory pattern of the monarch, as well as help them better understand and identify milkweed species that may be in buffer areas or areas around active farms," he says. "I think we—the ag, energy and local government sectors—can collectively make great strides in protecting that habitat to preclude a future listing."



Syngenta is working toward the same goal in several ways. The company participates in the Monarch Collaborative, a consortium of commodity and conservation groups. “These groups get together and say, ‘What can we do to increase the habitat and food sources for the monarch butterfly?’” Savinelli says. “The farmers are really important because they’re the large landowners, especially in the Midwest. We need their help.”

Operation Pollinator from Syngenta also aims to help monarchs, honey bees and other pollinators on commercial farms. This international biodiversity program works by creating specific habitats, tailored to local conditions. The program works with universities, governmental bodies, nongovernmental organizations and food producers.

Syngenta engages with stakeholders in additional biodiversity habitat programs, which all start with the idea of collaboration, Savinelli says. “We follow a model of partnership, because we certainly can’t do it alone. But if we can collaborate, everybody wins.”

### The Collaborative Approach

The American Farm Bureau’s position—like that of many agricultural groups—is that public land users, instead of the current system of land-use restrictions and litigation-driven decisions,

“ESA [Endangered Species Act] has morphed into a litigation-driven model that really punishes those who are practicing conservation and land management at the local level.”

—RYAN YATES

could more effectively achieve endangered and threatened species protection. “We should promote incentive-based conservation and outreach with growers and landowners and better incentivize them to make decisions that could ultimately help the long-term recovery of the species,” Yates says.

Another strategy that could improve outcomes for all parties is the NetConservation Approach, which says habitat improvement measures can offset the uncertainty over potential impacts on an endangered species. “We feel like there’s a strong potential for that to be a solution,” Campbell says. “Instead of all the energy and resources going into defending lawsuits, we could put those resources into habitat improvements within the agricultural landscape.”

It’s another approach Syngenta is pursuing to protect agriculture and wild species and their habitats, he says. “We’re exploring that as a possible solution, which would be a win-win for agriculture, for species and for our need to have a clear regulatory pathway.”

STORY BY SUZANNE BOPP

**FOR MORE INFORMATION** visit these Syngenta websites:

- > [www.syngenta-us.com/beehealth](http://www.syngenta-us.com/beehealth)
- > [www.syngenta-us.com/beehealth/operationpollinator.aspx](http://www.syngenta-us.com/beehealth/operationpollinator.aspx)

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# Building Yield

Syngenta uses advanced analytics to deliver top-end soybeans to growers.

**Q. How is Syngenta approaching soybean breeding differently?**

**A. Joe Byrum, Ph.D., head, soybean seeds product development, Syngenta, North America:** Syngenta is committed to harnessing the power of science to deliver the most advanced soybean varieties to our customers. Central to our strategy has been the innovative use of data analytics to maximize genetic gain. We've learned from other industries that have used analytics to enhance what they do—such as delivering packages more efficiently, enhancing medical research and scheduling airline flights to minimize delays. Syngenta is the first in agriculture to apply the same techniques to the breeding of plants, and the results have been tremendous.

Optimizing every step of the breeding process has helped accelerate the pace of developing breakthrough products. We've created tools to improve data accuracy and to help us identify the highest-yielding, best-performing

products. Every year, Syngenta makes thousands of breeding crosses that result in millions of new lines. It would be physically impossible to trial all those lines. Instead, our data-rich trait selection process allows us to reduce the haystack by 99 percent and trial only those lines that we know have tolerance to specific pests and diseases or targeted genes. In a nutshell, what we're doing is making better breeding choices, which means we're better able to spot winning varieties right from the start.

But our innovation strategy goes beyond product development. The strategy also focuses on motivating and attracting the best minds inside and outside of agriculture to work with us in addressing the significant scientific challenges underlying genetic gain. Collaboration has proved essential in this effort.

**Q. Why is partnering with groups outside of ag so important to your strategy?**

**A.** We recognize that innovation happens everywhere, which is why we've been partnering with universities, governments, nongovernmental organizations and anyone with expertise that can help us better understand how to bring a plant to its full potential. Often that means looking outside of agriculture. We actively seek access to cutting-edge science that complements our own teams' innovative research, as we work to deliver transformational agricultural solutions.

For example, the Crop Challenge, an innovation initiative sponsored by the Institute for Operations Research and the Management Sciences (INFORMS®) in coordination with Syngenta, invites anyone with expertise in data analytics to apply his or her skills in devising a data-backed method of increasing yield. Some participants may not have ever stepped foot on a farm before, but that doesn't matter. If a mathematician, computer scientist, engineering student or even a business owner with a sound scientific mind has ideas, the Crop Challenge provides a platform to share them.

Syngenta and INFORMS—the world's largest society for professionals in operations research, management science and analytics—recently announced the first Crop Challenge winners, and the level of participation far exceeded expectations. Not only are we learning more about how to improve agricultural products, we're also encouraging others to think—often for the first time—about important issues like global food security. (For more information, read “Crop Challenge Winners Announced” on page 31, or go to [www.ideaconnection.com/syngenta-crop-challenge](http://www.ideaconnection.com/syngenta-crop-challenge).)



# 3x

the historical average for annual yield gain achieved by applying analytics to plant breeding



**Q. What are the results of your approach?**

**A.** Our customers are reaping the benefits of this innovation strategy. As genetic gain increases at a quickened pace, product lifecycles shorten, which means we bring advanced traits to market through a faster, more effective process. Data analytics improves product placement for increased consistency and performance. After all, growers need maximum performance today, not just tomorrow.

Higher yields are the benchmark of a superior product. In the past, our products improved every year, but they did so at a slower pace. Today, our innovation strategy has boosted the average annual increase in yield across our soybean portfolio by a factor of three.

We're also consistently producing varieties that are outpacing leading competitors in yield. A good example is our NK<sup>®</sup> Soybeans S39-C4 brand, which has strong sudden death syndrome resistance. In 312 trials across Illinois, Indiana and Ohio in 2015, it outperformed Asgrow<sup>®</sup> varieties by an average of 3.1 bushels per acre. This means that for every 100 acres of Asgrow soybeans they harvested, growers would likely have received another \$2,480 if they had planted S39-C4 instead, assuming \$8-per-bushel soybeans.


More broadly speaking, the goal of our approach is to grow more with less. Achieving this goal has important societal benefits. The fast-growing global population needs sustainable agricultural solutions. Through The Good Growth Plan, Syngenta has made a commitment to help reduce agriculture's impact on the environment, while helping to ensure a growing global population will have enough food for future generations. (See "A World of Difference," page 16.)

**Q. What are the next steps in breeding innovation for Syngenta?**

**A.** We're just beginning to scratch the surface. Our innovation strategy is forward-looking, laying the foundation for future success. The focus on developing talent ensures that Syngenta will continue its role as an industry leader in applying leading-edge science to crop genetics. Attracting, motivating and engaging skilled individuals outside our industry in a collaborative effort guarantees a steady supply of fresh ideas and approaches to tackling a grower's most difficult production challenges.

Our suite of data analytics tools has achieved impressive results, but there is more to be done. The tools undergo constant revision and improvement. We never assume the job is finished, because we know that there will always be a better way of doing things.

We are well underway to developing sophisticated analytical tools for sweet corn, field corn, sunflower and watermelon like those that we created in soybean. Because each tool is highly customized, deploying them will be a tremendous achievement. We expect these tools will be ready by 2018.

What it all means is that growers can continue to trust that when they see Syngenta on the label, they're getting some of the most advanced genetics available. 

INTERVIEW BY CHRIS TUTINO

**“As genetic gain increases at a quickened pace, product lifecycles shorten, which means we bring advanced traits to market through a faster, more effective process.”**



**JOE BYRUM, PH.D.**  
Head, Soybean Seeds  
Product Development,  
Syngenta, North America



# Protecting Traits

Growers who safeguard valuable seed and trait technologies will help them remain effective for the long term.

**T**rait stewardship requires current generations to balance their needs with those of future generations. When the concept is applied to seeds, it involves practices that will help sustain the value of today's crops and traits to growers for years to come.

"For example, good stewardship practice, such as planting a refuge, help preserve the effectiveness of *Bt* technology, reducing the risk that insects will develop resistance," says Abby Vulcan, trait stewardship specialist at Syngenta. "Resistance can affect a grower's yield and profitability and a retailer's ability to sell products. It's important to work together to combat resistance."

Since strong stewardship programs are the best defense for protecting the long-term viability of seed and trait technologies, Syngenta takes responsibility for managing a product's complete life cycle. The company also looks to agricultural retailers and Syngenta Seed Advisors™ to help protect the long-term value of and investment in input traits such as *Bt* technologies and output traits like Enogen® corn enzyme technology, which facilitates the ethanol production process.

## **Bt Corn Stewardship Requirements**

*Bt* trait technologies have been instrumental in controlling costly pests, including the European corn borer and corn rootworm. To help preserve these important technologies, the U.S. Environmental Protection Agency (EPA) requires a refuge on every farm where growers plant *Bt* corn. Syngenta offers refuge-in-a-bag options to make planting a refuge easy. However, these options are not available in all products or regions of the country; therefore, growers must make sure they purchase and plant

the appropriate refuge. As part of EPA refuge requirements, growers using *Bt* corn from Syngenta—or any other seed company—must sign a stewardship agreement.

"If farmers don't follow stewardship rules, they risk losing their right to plant corn with these types of trait technologies," says Bernie Walsh, a Syngenta Seed Advisor from Durand, Illinois. "We must educate growers about refuges to maintain trait viability."

Growers who don't follow refuge requirements also risk the long-term costs of insects developing resistance to valuable traits. In response, Syngenta and other trait technology developers have formed the Agriculture Biotechnology Stewardship Technical Committee to help educate the industry and monitor insect resistance-management (IRM) compliance. The committee has worked with the National Corn Growers Association (NCGA) to develop IRM tools, such as the IRM refuge calculator, which may be downloaded from [www.ncga.com](http://www.ncga.com). This tool can help

**"Resistance can affect a grower's yield and profitability and a retailer's ability to sell products. It's important to work together to combat resistance."**

—ABBY VULCAN

growers determine the appropriate refuge, the quantity of standard seed bags to buy for both trait and refuge, and possible configurations for planting certain corn products in the U.S.

Syngenta provides access to its stewardship process, agreement and guide, as well as a link to



the NCGA IRM refuge calculator on its stewardship webpage ([www.syngentastewardship.com](http://www.syngentastewardship.com)). Syngenta updates its stewardship guide each year and includes information such as refuge size requirements based on geography and product, refuge planting options, bag-tag labels, and corn rootworm best management practices. Syngenta also offers a toll-free stewardship helpline: 877-476-2676. "All of these tools demonstrate the importance of trait stewardship," Vulcan says.

### Preserving Output Trait Value

Protecting the value of Enogen corn enzyme technology—the first genetically modified output trait in corn specifically for the ethanol industry—is also critical. Because Enogen corn is genetically modified to express the alpha amylase enzyme within the corn itself, ethanol plants don't need to buy liquid alpha amylase normally used in the ethanol production process. Enogen corn allows ethanol producers to process more corn with less water, electricity and natural gas on a per gallon basis, effectively reducing an ethanol plant's carbon footprint.

But Enogen corn is not commodity corn, notes Jack Bernens, head of Enogen at Syngenta. "It is a high-value specialty grain for use in dry-grind corn ethanol production," he says. "Since its introduction in 2011, Syngenta has voluntarily implemented comprehensive stewardship protocols to mitigate potential commercial concerns about Enogen corn affecting unintended processes."

By following simple yet specific stewardship requirements, growers who plant Enogen corn have the opportunity to receive a 40-cent-per-bushel (on average) premium. These requirements include planting border rows around fields with Enogen corn, cleaning out planters and combines, and storing Enogen grain in bins separate from non-Enogen corn.

Additionally, Syngenta has the Enogen Value Tracker™ tool in place to simplify grain tracking. This tool is a naturally derived purple tracer trait in select bags of Enogen hybrids. During the growing season, the Enogen Value Tracker appears as randomly dispersed purple plants across an Enogen field and represents up to 5 percent of the plants in a given field. The grain produced from these purple (and neighboring) plants are made up of both yellow and purple kernels to make visually tracking Enogen corn easier from harvest through storage and processing. The purple kernels also help make sure this high-value grain is delivered to its intended destination.

"The Enogen Value Tracker reinforces good stewardship practices," says Enogen grower Marc Mummelthel of Waverly, Iowa. "It helps growers like me manage border rows more easily and visually track Enogen grain from harvest through delivery to the ethanol plant."

As growers weigh their current management decisions, these stewardship practices will help them retain valuable traits for use today—and tomorrow. 🍃

STORY BY LYNN GROOMS



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# Ripple Effect

Syngenta introduces this year's Voices 4 Wheat bloggers, urges soil sampling for soybean cyst nematodes, and applauds the winners of the Syngenta Crop Challenge in Analytics and the #NotAfraidtoWork contests.

## EDUCATION

### > Voices 4 Wheat Blog Kicks Off

Syngenta will profile three innovative wheat growers through its 2016 Voices 4 Wheat campaign. This wheat-focused blog will highlight the growers' firsthand experiences during the season. All AgriPro® Associates, this year's bloggers are:

- > **Brett Wilken** of Blackfoot, Idaho, who oversees the state's Thresher Artisan Wheat seed program, which provides high-grade wheat for demanding consumer food ingredients
- > **Matthew Lobmeyer**, owner of Lobmeyer Seed Farms in Garden City, Kansas
- > **Paul Anderson**, owner of Victoria Seed and Processing in Coleharbor, North Dakota

Voices 4 Wheat serves as an interactive resource for wheat growers and retailers who will use the blog to discuss pest and production challenges throughout the season. To follow the 2016 participants on their journey, visit [www.voices4wheat.com](http://www.voices4wheat.com).

### >> Sample Soil for SCN

Growers who intend to plant soybeans next spring in fields where they are currently growing corn or soybeans should consider making plans now to sample their soil in the fall, when soybean cyst nematodes (SCN) will be at their peak.

"When rotating a cornfield to soybeans, a grower should sample for SCN following fall corn tillage," says Dale Ireland,



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[www.syngentathrive.com](http://www.syngentathrive.com).



Left to right: Greg Gungoll, AgriPro regional account lead; Greg McCormack, AgriPro key account manager—Plains region; Anna Lobmeyer, daughter of Matthew Lobmeyer; and Matthew Lobmeyer, AgriPro associate and owner of Lobmeyer Seed Farms, pose for a photo before dramatic skies in Garden City, Kansas.



Ph.D., technical product lead at Syngenta. “Although planting soybeans in consecutive years is not recommended, for growers who do, it’s best to sample within the existing soybean row for SCN.”

Growers can further fortify their SCN management strategy with Clariva® Complete Beans seed treatment, a combination of separately registered products. Clariva Complete Beans complements SCN-resistant varieties and improves future yield potential, by offering season-long SCN protection and reducing SCN reproduction and selection pressure. For more information, go to [www.clarivacompletebeans.com](http://www.clarivacompletebeans.com).

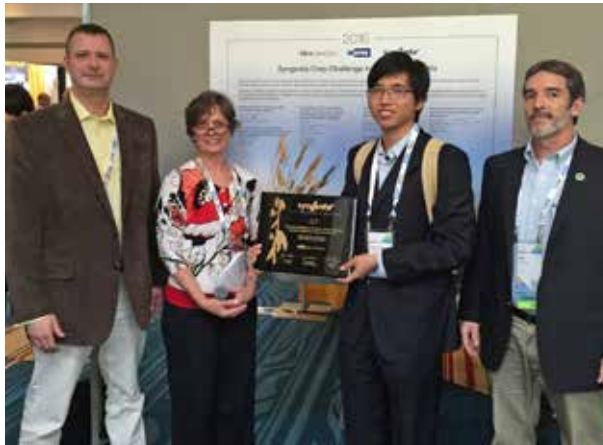
## HONORS AND AWARDS

### > Crop Challenge Winners Announced

Syngenta and the Institute for Operations Research and the Management Sciences (INFORMS®) recently named a team from Stanford University the \$5,000 winners of the inaugural Syngenta Crop Challenge in Analytics. Student team members Xiaocheng Li and Huaiyang Zhong and associate professors David Lobell and Stefano Ermon received the honor this spring at the INFORMS Analytics Conference in Orlando, Florida.

The challenge, sponsored by INFORMS in coordination with Syngenta, aims to fuel innovation among participants to use advanced analytics in biochemistry and agriculture to combat global food insecurity. The winning team’s entry modeled a system for predicting soybean seed variety selection to maximize yield.

For more details about the Crop Challenge and to register for the 2017 competition, visit [www.ideaconnection.com/syngenta-crop-challenge](http://www.ideaconnection.com/syngenta-crop-challenge).



Huaiyang Zhong, third from left, accepts a plaque on behalf of the Stanford University team, which won the first Syngenta Crop Challenge in Analytics. From left to right: Joe Byrum, Syngenta; Robin Lougee, IBM; and Jim Williams, FICO, also attended the award ceremony.

# thrive

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# Photo Finish

A farmer reveals the story behind the image that won the #NotAfraidtoWork photo contest.

**A**s a young girl growing up on a farm, Cristen Clark never had to learn how to work hard; it was second nature. For seven generations, her family has farmed the same land in Runnels, Iowa, where they raise pigs and cattle and grow corn and soybeans.

It's these strong generational ties to agriculture that also led Clark to become a prize-winning photographer. Recently, the photo she snapped in 2015 of her 4-year-old son, Barrett, and her dad, Rodger, during a rare break from farm work, placed first in the Syngenta #NotAfraidtoWork photo contest.

"Usually, we'll wait for a rainy day to take a break during harvest," Clark says, "but we had no rainy days last fall and were way ahead of schedule. The afternoon I took that photo, my dad turned off the combine early so we could enjoy each other's company."

Clark first learned about the Syngenta #NotAfraidtoWork photo contest in a tweet from "Dirty Jobs" star Mike Rowe. His unwavering support of agriculture and passion for hard

work inspired Syngenta to partner with his nonprofit organization, the mikeroweWORKS Foundation, as part of the company's introduction of Trivapro® fungicide.

"Like millions of American farmers, Trivapro works hard, delivering long-lasting disease protection in corn, soybeans and wheat," says Andrew Fisher, fungicide product lead at Syngenta. "The #NotAfraidtoWork contest was a chance for us to launch Trivapro and celebrate farmers, including Cristen and her dad, who work from dawn to dark with drive, endurance and grit."

Kicked off at the 2015 Farm Progress Show, the #NotAfraidtoWork photo contest encouraged farmers to submit images that depicted what being "not afraid to work" meant to them. In return, Syngenta would reward the winner with a \$2,000 gift card to use for fun after an exhausting season. Additionally, every time someone mentioned the contest on social media, Syngenta donated \$5 to the National FFA Foundation through Rowe's foundation.

In the end, the donation to help future farmers totaled \$10,000, and the contest generated hundreds of submissions, with Clark's photo receiving the most online votes.

To Clark, her photo portrays the strength that has allowed her family to continue farming for multiple generations. It also captures the special bond between her father and her son.

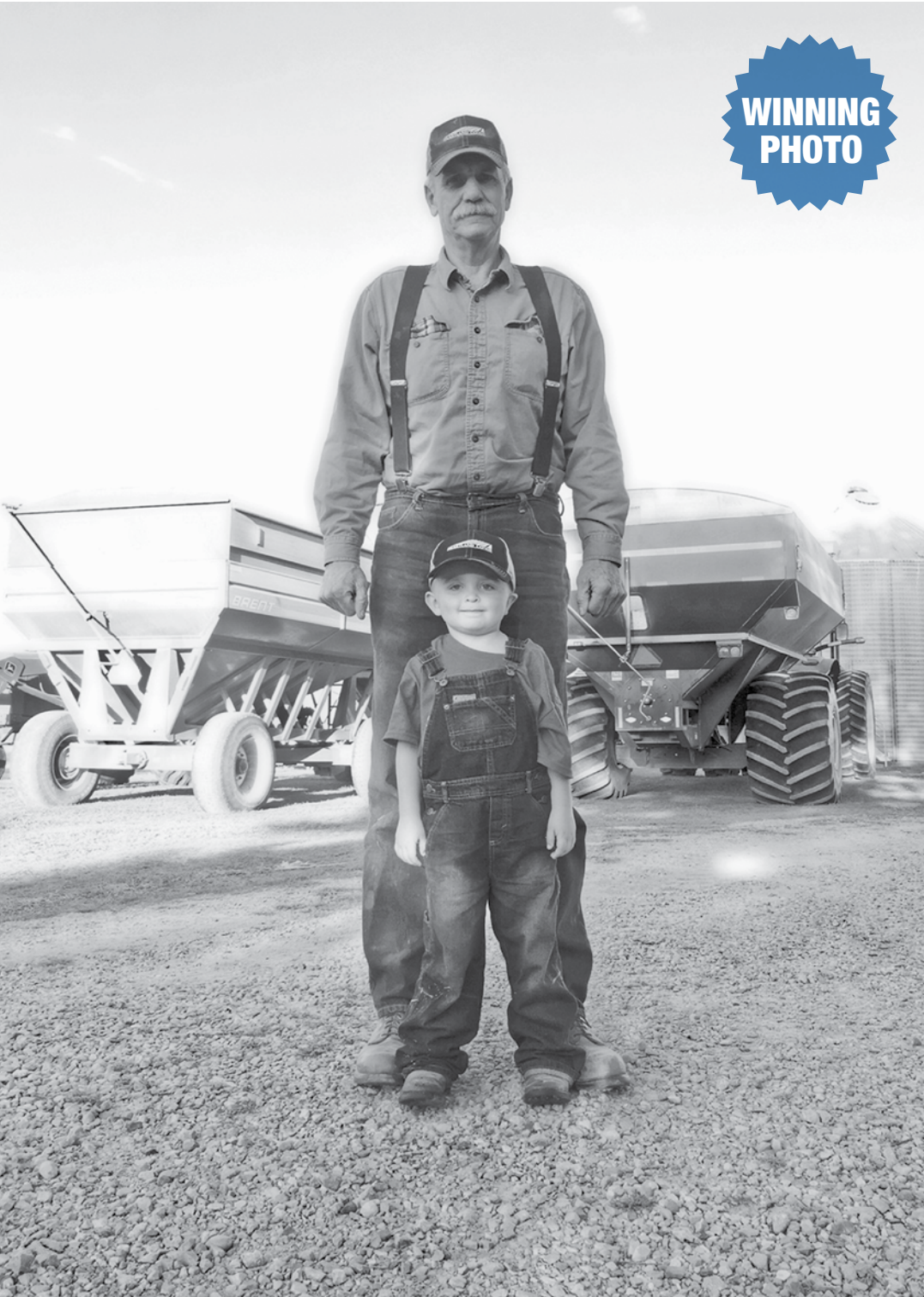
"Those two share a love of anything farming," she says. "My dad is the strong silent type who never quits until the job is done and done right. That's the essence of being 'not afraid to work,' which is vital to the success of my family's future."

In between all the hard work a farm demands, "relishing the small moments"—like the one depicted in her winning photo—is also important, Clark notes. She plans on using her prize winnings to install a basketball goal for her children to help them better understand the importance of balancing work and leisure. "Sometimes you have to stop and take the time to appreciate one another," she says. "We're all trying to get better at that." ■ STORY BY JANVIKA SHAH

Below: Cristen Clark takes a photo of (from left to right) her dad, Rodger Slings; her 4-year-old son, Barrett; and her husband, Mike.







Clockwise from middle right: (from left to right) Rodger Slings, Ceil Slings, Cristen Clark, Barrett Clark, Mike Clark, Tanna Weyers, Halle Clark, (sitting on fence), Kemper Weyers (on ground), Kendyl Weyers (in arms of Tanna) and Drew Weyers enjoy being together; Cristen holds a baby pig while Barrett watches; Rodger and Barrett stand together for a multigenerational photo; Cristen talks with Rodger while walking on their farm.

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