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1Q 2022

COMING HOME

Grandfather Motivates #RootedinAg Winner to Pursue a Farming Career

Viruses: Microorganisms With a Macro Impact

Fungicides Help Grow Cleaner, Greener Crops, Improve Profitability

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 Austin Walter (right), the 2021 #Rooted in Ag Winner, was inspired by his grandpa, Ralph Walter (left), to pursue a career in cattle farming. -*Photo: Seth Lowe*

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 The peanut industry has largely controlled tomato spotted wilt virus, a serious threat to peanut production, through collaboration and new tools.
Photo: iStock

Yes, Credible Journalists Exist

The U.S. media's credibility started coming under fire a few decades ago, back when I was a newspaper reporter. It pains me to say this, but it's a credibility crisis that's likely to get worse.

Here's what the Pew Research Center said in a February 2021 report: "Misinformation will be rampant: Digital propaganda is unstoppable, and the rapidly expanding weaponization of cloud-based technologies divides the public, deteriorates social cohesion and threatens rational deliberation and evidence-based policymaking."

That was on the worst-case side. No response was listed in "the hopes."

In this information age, how do we decide what to believe?

On pages 2 and 3, our guests offer tips on evaluating information. But we'd be remiss if we didn't also note that our industry has an enhanced opportunity to score credible news through our ag trade media.

In my current and previous roles, I worked in or with ag media, and the vast majority of ag trade journalists work harder than they should for less pay than they deserve because they share a passion for ag. They are in it for our farmers.

Take, for example, Brian Winnekins, named 2020 Farm Broadcaster of the Year by the National Association of Farm Broadcasting. Asked why — on top of running WRDN in Durand, Wisconsin, and providing seven hours of farm news each day — he decided in 2019 to create opportunities to support mental health in our farm community, he answered simply and humbly. "Talking to our farm listeners, we saw a need," he said. Then he shrugged. "We know these people, and we want to support them."

That's *somebody* we can trust. And he's just one of many working at our ag radio stations and publications to better our industry. 🌱



PAM CARAWAY

"The vast majority of ag trade journalists work harder than they should for less pay than they deserve because they share a passion for ag. They are in it for our farmers."

PAM CARAWAY
Marketing Communications Lead
Syngenta Crop Protection, LLC

Weigh the Evidence

Experts share advice on drinking from the information firehose available to growers.

Q. What sources do you find the most helpful for evaluating new ag technology?

A. David Zaruk, Ph.D., professor of communications and marketing at Odisee University College in Brussels, environmental health policy risk analyst at Risk Perception Management: Farmers. If a technology works, they will demand it again. If it doesn't, they will not waste their money the next season. Researchers need to work closely with farmers, especially those with a pioneering spirit who are actively working for a better, more sustainable means to harvest.

A. Tim Pastoor, Ph.D., president of the Health & Environmental Sciences Institute, founder of Pastoor Science Communications, LLC: Go to the Environmental Protection Agency (EPA) or the Food and Drug Administration; they are qualified, and they are the referees in these situations. You need a referee because if you left it to the players, there would be a considerable amount of bias in every single call. Those government agencies have access to all the relevant facts and must come to an objective decision that's in the best interest of everyone.

Q. How can ag consumers determine bias in a study?

A. Zaruk: A lot of times, they can't. Before the internet revolution, studies were published and debated before science communicators conveyed the information to the public. Most news organizations no longer have science editors. This means consumers are "doing their own research," which generally is simply confirming their own biases. Objective, quality research rarely has the support to reach the public, but it does still exist, and critically thinking consumers can pick it out if they're looking.



A. Pastoor: I accept and expect some level of bias in everything. That's human nature. It's too easy to say, "Hey, you're biased. I'm not." Bias is about our individual perspectives and context. The same data can be interpreted and cast in many different lights. But I try to triangulate information against three pillars: First, I look at the opinion in terms of the speaker's qualifications. Is this person an expert? What makes him or her an expert? Ask your doctor for an opinion on health, and you'll get expert advice. Ask your doctor about climate change, and you might get an opinion that isn't much better than your own. Second, accept that this person has biases, but seek out their objectivity. If an opinion is objectively supported by facts, I can be OK with that, even when I disagree with the interpretation. Lastly, I



"Participants up and down the agricultural supply chain need to make sure they share new information with each other as it becomes available, because what is relevant to one is also relevant to their industry partners."

—DAVID ZARUK, Ph.D.

Professor of Communications and Marketing, Odisee University College in Brussels,
Environmental Health Policy Risk Analyst at Risk Perception Management



“When reading an article, wherever it happens to be, ask yourself, ‘Is it referencing consensus information from qualified sources that try for objectivity?’ It needs to check those boxes.”

—TIM PASTOOR, Ph.D.
President of the Health &
Environmental Sciences
Institute, Founder of
Pastoor Science
Communications, LLC



look for other opinions to find a consensus viewpoint. If several experts express the same or similar viewpoints, that strengthens the conclusion.

Q. The information flow is a raging river these days. How can retailers and farmers find information relevant to their operations?

- A. Zaruk:** Unfortunately, there is often poor communication and coordination between researchers, ag retailers and farmers, which also extends to food processors, manufacturers, brands and consumers. Participants up and down the agricultural supply chain need to make sure they share new information with each other as it becomes available, because what is relevant to one is also relevant to their industry partners.
- A. Pastoor:** We have a human tendency to believe what we want to believe. But if you're sincerely interested in learning and forming a solid perspective, use this three-step process: consensus, qualifications and objectivity. When reading an article, wherever it happens to be, ask yourself, “Is it referencing consensus information from qualified sources that try for objectivity?” It needs to check those boxes. Avoid yoga teachers opining about pesticides while

trying to sell their own dietary supplements. Do go to the EPA website and look for fact sheets and FAQ that can help you form your opinions.

Q. When we see inaccurate information on social media, is there a strategy that can help change the perception?

- A. Zaruk:** It seems that more and more, social media is becoming a divisive world of echo chambers with limited levels of stakeholder dialogue. Public trust is eroded when even the experts are seen attacking and silencing those who may disagree. The first point in any strategy is to engage openly, professionally and calmly; it is not about winning each argument for the sake of winning the argument, but about developing public trust.
- A. Pastoor:** It's important to take a deep breath and decide if engaging would make a difference. Walk away from extreme positions. Onlookers may see you as the same. If you decide to engage, ask for or state facts and qualifications, and look for objectivity, especially in yourself. Cool-headedness often starts with opening our ears before opening our mouths, then engaging in factual discussion and civil debate. 🍀

INTERVIEWS BY TYRELL MARCHANT

Today's Agenda

Key regulation impacts Freedom to Operate and the future of U.S. agriculture.

As we head into a midterm election year, the policies impacting agriculture are regularly in the headlines.

“Over the last few years, the words ‘farming,’ ‘agriculture’ and ‘rural America’ have been in the national media more so than at any other point in my lifetime,” says Kelsey Barnes, federal government relations manager at Syngenta. “Many U.S. farmers realize now more than ever how regulations and the political environment in Washington, D.C., impact their operations.”

But even with constant media coverage, it's hard to keep up with the changes.

Keeping Stepped-Up Basis

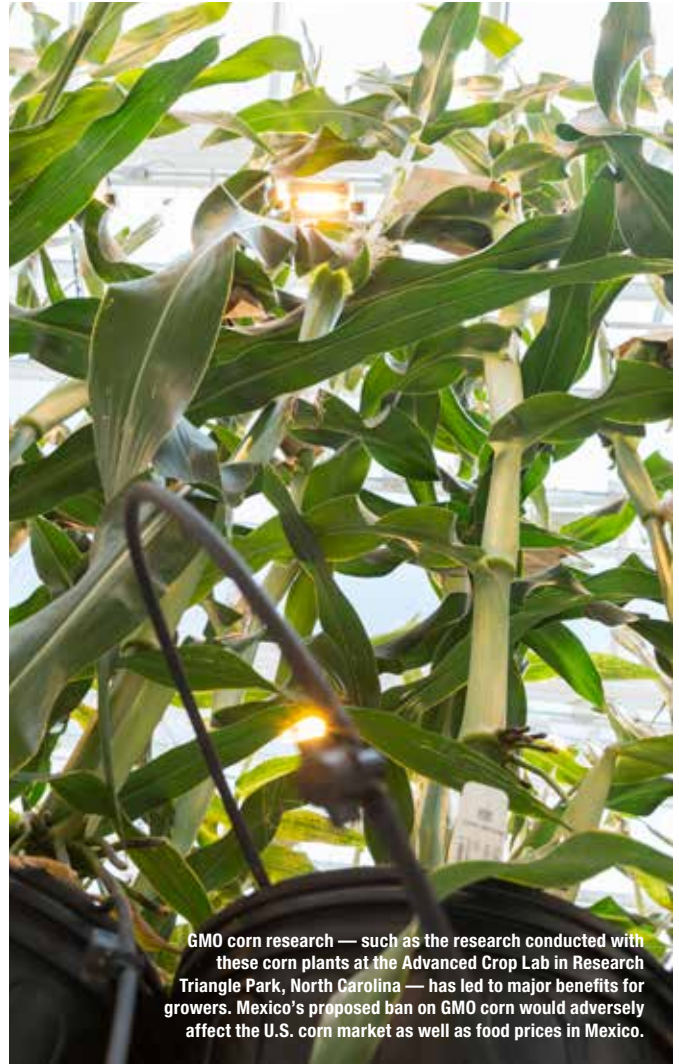
To the relief of many farmers, stepped-up basis is no longer in imminent danger of elimination. As farms pass from generation to generation, land values tend to increase. With stepped-up basis, farms' successors only pay capital gains taxes on property value increases since the land was inherited. Without stepped-up basis, they would pay taxes on the full increase in value since the time that the land was originally purchased by a relative.

“Eliminating stepped-up basis would make it nearly impossible for many family farms to continue,” Barnes says. “We hear a lot about protecting small family farms, but without stepped-up basis many farmers would be forced to sell land in order to pay taxes.”

According to the U.S. Department of Agriculture's (USDA's) analysis, eliminating stepped-up basis would create a new tax burden for 17% of small farms, 66% of midsized farms, 80% of large farms and 96% of very large farm operations.

Needing Clarity About the Denial Decree

Mexico's timelines or details around the phasing out of glyphosate are murky after publishing a decree banning its use as well as banning imports of genetically modified (GMO) corn by 2024. Follow-through on this decree could negatively impact American corn growers, as Mexico is a top export market for



GMO corn research — such as the research conducted with these corn plants at the Advanced Crop Lab in Research Triangle Park, North Carolina — has led to major benefits for growers. Mexico's proposed ban on GMO corn would adversely affect the U.S. corn market as well as food prices in Mexico.



“Eliminating stepped-up basis would make it nearly impossible for many family farms to continue. We hear a lot about protecting small family farms, but without stepped-up basis many farmers would be forced to sell land in order to pay taxes.”

—KELSEY BARNES
Federal Government Relations Manager
Syngenta

U.S. corn. Mexico demonstrated a committed anti-GMO stance recently when it rejected a new Bayer stacked corn trait, but a lack of clarity makes it hard for the U.S. agriculture industry to forecast or prepare for the transition.

“While there haven’t been further signals about how the transition will roll out, this development is not a promising sign for any companies, including Syngenta, that have biotech lined up,” Barnes says. “Even worse, if they were to ban all importation of GMO corn, we would likely see a rapid decline in the U.S. corn market, and Mexico would see a rapid increase in food prices.”

Connecting Rural America

In 2020, the Federal Communications Commission found that 18.3 million Americans lack access to broadband internet. Other research organizations put the number closer to 42 million. Rural communities may, however, see improvements soon. The Infrastructure Investment and Jobs Act allocates \$65 billion to broadband infrastructure. Of this, \$2 billion will go directly to the USDA’s ReConnect Program. This is in addition to Secretary of Agriculture Tom Vilsack’s late 2021 announcement opening applications for up to \$1.15 billion in loans and grants for expanding the availability of broadband in rural areas through the ReConnect Program.

“This is a significant increase in rural broadband funding and can only positively impact our customers and employees,” Barnes says. “When farmers in rural America have access to quality internet, it’s easier for them to connect to products and resources that benefit their families and farms.”

Making an Impact

Syngenta is committed to advancing policies that improve the lives and operations of U.S. farmers. The Syngenta Corporation Employee Political Action Committee (Syngenta PAC) is an employee-based political action committee committed to taking proactive measures in government affairs. The Syngenta PAC is on the front lines advocating policy outcomes that will favorably impact individuals in the ag industry.

“The Syngenta Corporation Employee Political Action Committee is entirely funded by employees — not Syngenta as a company,” Barnes says. “These are employees who are contributing because they believe in the importance of supporting policies and members of Congress who support their business interest, the agriculture industry and their growers.”

The Syngenta PAC supports candidates and members of Congress who promote the ag industry’s Freedom to Operate. 🌱

STORY BY MIRIAM PAULSON



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Tapping the Wild Side of Wheat

Gene science and predictive breeding accelerate improvements in wheat varieties.

Just as geographic information system (GIS) technology transformed planting and harvesting, advancements in DNA-driven seed production are revolutionizing seed choices. For wheat growers, predictive breeding using DNA is getting new seed varieties to market faster and is on a path to increasing end-user specificity and on-farm profit opportunity.

According to Paul Morano, head of North American cereals for Syngenta, using DNA markers to confirm traits in existing wheat strains eliminates multiple generations of hit-and-miss field trials that had been the norm.

“Today, we can look at 100 wheat tissue samples and find the ones that have the DNA string we want,” he says. “We know for a fact it’s in there.”

From there, confirming that the trait was picked up when the cross was made simply requires a DNA test.

“So, there’s a huge difference in the number of plants, the number of trials and the amount of labor you need,” Morano says. “It’s much, much better than the way we were doing it before.”

Although technology such as CRISPR — clustered regularly interspaced short palindromic repeats — could further reduce the timeline by allowing scientists to manipulate the plant’s DNA in a lab versus in a field, the U.S. Department of Agriculture (USDA) currently prohibits genetic modification of wheat through a non-natural process. Genomic editing is often defined as changes made within a plant’s own DNA, with genetic modification defined as the insertion of a gene.

“That’s where the crux of gene editing comes in, because there is no genetically modified wheat; GM wheat is not accepted,” Morano says, adding that even the definition of genetic modification is a gray area. Some interpret it as the insertion of genes from one species into another, while others apply the term to any artificial movement of genes, even same-species transfers.


The Search for Consumer Acceptance

That’s a frustration for Dave Milligan, Michigan farmer and president of the National Association of Wheat Growers.

“Wheat’s kind of fallen behind some of the other crops as far as the technology other crops have used,” he says. “Consumers are resistant to products produced by genetic modification, and it’s really been detrimental to moving wheat research ahead, wheat breeding particularly.”

Milligan hopes the precision of CRISPR will result in wider acceptance of the technology, and he appreciates the gains being made in that arena.





Emmer wheat, an ancient grain native to Israel, holds promise for wheat breeding because more than half of its chromosomes are the same as those of domestic wheat.

“We’re growing a lot more bushels on a lot fewer acres than we were 50 years ago,” he says. “They have made improvements, and we need to continue to do that.”

Morano says Syngenta continually breeds for increasing yield and disease resistance, but those aren’t the only goals in the breeding program. Breeders also test for consistent performance under a variety of conditions and for increased flour quality. They also research gluten properties to improve digestibility.

“Growers want yield, but I think another thing they want is consistency,” he says. “Wheat is grown on some tough acres, and in many places you can grow a good crop if conditions are right, but when conditions change, your crop goes bad in a hurry. So, farmers want — need — consistent performance.”

Another focus in breeding is finding DNA markers for wheat quality attributes that will improve, and perhaps define, the final flour product.

“That’s important, because then you can breed for a specific end use, whether that’s a bread, a cracker or a cookie,” Morano says. “So that’s one thing a lot of people are working on.”

Another is gluten, the substance that provides the viscoelastic properties that give rise to bread but that also causes problems for those with celiac disease. Allan Fritz, Ph.D., a professor of wheat breeding at Kansas State University, says while a celiac-safe wheat may not be possible, identifying problematic proteins in gluten is a realistic target.

“As a research community, we could look at whether we can make that gluten less reactive in the digestive system so people are less likely to develop sensitivities,” he says.

Wild Relatives’ Promise

Breeders are exploring the vast resource of “wild relatives,” naturally occurring wheat species, to improve commercial varieties. Fritz notes that these wild relatives give breeders access to unique genetics that are not currently available in commercial varieties.

“Only a handful of those plants were involved in the hybridizations that led to modern-day wheat,” he says.

Researchers, including Fritz and the team at the USDA’s Hard Winter Wheat Genetics Research Center in Manhattan, Kansas, are exploring what the wild species of wheat can contribute to commercial production goals for wheat varieties.

The research already shows that wild relatives can contribute disease and insect resistance, as well as nutritional traits that would make a healthier crop. One of the most promising, Fritz says, is wild emmer, an ancient grain native to Israel that shares 28 of domestic wheat’s 42 chromosomes.

“If we could redomesticate these plants, we could give people something that is actually better for them — better antioxidant capacity or better iron and zinc nutrition, which is needed in some parts of the world,” Fritz says. “I think there’s a story there, about this natural goodness in the grain we’re providing through these new materials. If we can make things that really are better for people from a health standpoint, there’s a tremendous amount of value in that.” 🌱

STORY BY AMY CAMPBELL

The Macro Impact of Microorganisms

Plant viruses require a global effort to minimize their impacts on crop productivity and grower profitability.

By Cara Oltman

Most researchers whose life's work is addressing the prevalence and impact of plant viruses say they aren't a new agricultural problem. But viruses evolve and adapt rapidly, posing a challenge that's intensifying over time — intensifying as in causing \$60 billion in crop losses worldwide, according to a 2019 estimate.¹ Pre-pandemic we might have referred to this growing threat as “going viral,” — after all, we are talking about viruses. Since this feels like a good time to retire that phrase, let's instead say we have a problem with microorganisms going macro.

It's an impact that can devastate a field. For instance, the Soybean Research & Information Initiative reports:

- Yield losses of nearly 52% in southern germplasm due to bean pod mottle virus (BPMV).²
- Losses from soybean mosaic virus (SMV) as high as 94%.²
- Complete yield loss in many cases when both BPMV and SMV infect soybeans, because symptoms are more severe than those either virus produces alone.

The double whammy of BPMV and SMV is one instance of a phenomenon known as viral synergism.

Viral synergism and climate change are among the factors contributing to the prevalence and severity of viral disease, according to associate professor and South Dakota State University Extension plant pathologist Emmanuel Byamukama, Ph.D.

“Viral synergism, when multiple species are playing tag team in an infected plant, has been observed more frequently and can result in increased accumulation of one or more viruses, causing more severe symptoms than if only one were present,” Byamukama says.

In regard to climate change, he says, warmer temperatures for longer periods of time extend the reproduction period and life span of insect vectors, allowing more opportunity for virus transmission.

Taking a Multidisciplinary Approach

Kiran Shetty, Ph.D., Syngenta technical development lead for potatoes, points out that viruses continually evolve.

Through mutation, recombination and genetic material changes, viruses reorganize and adapt.


For instance, the number of Potato Virus Y (PVY) strains detected in U.S. potato fields has increased substantially. “Before the 2000s, we only had one strain of PVY impacting commercial potato production, and it primarily resulted in yield loss,” says Jonathan Whitworth, Ph.D., a research plant pathologist with the U.S. Department of Agriculture's Agricultural Research Service

Potato Virus Y (PVY)



Potato Leafroll Virus (PLRV)



A man wearing a blue long-sleeved shirt with the Syngenta logo, blue jeans, a grey baseball cap with the Syngenta logo, and glasses is kneeling in a potato field. He is holding two potatoes in his hands, examining them. In the foreground, there is a large pile of harvested potatoes. The background shows a vast field of harvested potatoes under a clear blue sky with some clouds. There are some structures and a green tarp in the distance.

“ The neonicotinoid class of chemistry was introduced just before the turn of the century. And since the introduction, there has been a marked reduction of PLRV in potatoes in North America.”

— KIRAN SHETTY, Ph.D.
Technical Development Lead
for Potatoes, Syngenta

Kiran Shetty, Ph.D., technical development lead for potatoes at Syngenta, examines potatoes to assess their quality at a Grow More™ Experience site in Ephrata, Washington.

Bean Pod Mottle Virus (BPMV)



Soybean Mosaic Virus (SMV)



(USDA-ARS). “Since then, we have identified several new strains of PVY in grower fields that are also causing necrosis, which impacts tuber quality as well.”

The good news is that through advancements in technology and global connectivity, researchers and breeders can share information more rapidly, identify potential challenges more quickly, and leverage tools and resources to fight the battle head on. That connectivity is essential to the multiagency and multidisciplinary approach needed to control viruses.

Regulators concentrate on containing viruses. Certified seed organizations help ensure a clean start. Entomologists evaluate insect control measures. And breeders focus on developing resistant varieties.

Containing a Virus

Because there is no cure for viruses nor a way to control them once they infect a plant, preventive measures are the best way to reduce viral risk. “The best line of defense against a virus is to keep it out,” Byamukama says. “On a global scale, we do this by ensuring that plant materials being imported from other countries or being transported from one region of the U.S. to another are clean and don’t hide pathogens and arthropods.”

On-farm, commercial growers can minimize the risk of infection by using certified seed. In the case of potatoes, stem cutting and micropropagation techniques, in which plantlets are grown in tissue culture, help obtain pest-free potato plants for propagation and production of certified seed tubers. Several generations of plants are grown in the field to produce certified seed tubers for commercial growers.

“PVY can be highly detrimental to seed growers, as it greatly impacts their ability to sell higher-quality seed,” Whitworth says. “For the commercial grower, the biggest impact is probably yield loss. Our studies have shown that for about every 1% of PVY you have in a commercial crop,

you can lose about 1.5 sacks, or 150 pounds, of potatoes. And the quality defects caused by necrosis can result in a lot being rejected by the buyer.”

“Detection and proper diagnosis during the certification process help ensure that seed pieces do not carry viruses into a newly planted commercial field,” Shetty says. “The states in the Pacific Northwest, for instance, work very closely to ensure that seed lots are not infected with

potentially damaging viruses like PVY.”

Hygiene is important at the farm level as well. Cleaning equipment before transporting it between fields is an important prevention measure growers can implement to reduce spread.

Controlling the Vector Factor

The next step to protecting commercial crops from viruses is controlling the vectors. In most cases, the vectors that transmit plant viruses from one living plant to another are insects. Though some vectors are more efficient than others, all must be controlled to stop the spread.

Byamukama warns, “By the time you see symptoms in the field, it is too late. Once one plant in the field is infected, you can’t cure it — you can only prevent the virus’s spread to other plants.”

Applications to stop the spread can sometimes start with seed treatments.

For instance, Byamukama says, “Bean leaf beetles, the vector of BPMV, survive the winter as adults and emerge in the spring to feed on seedling plants. A seed treatment insecticide kills the vector upon feeding, which means it will only affect that one plant, if the beetle was already carrying the virus in its body — as opposed to the beetle’s feeding and transmitting the virus to several plants in the same field.”

In potatoes, the use of neonicotinoid insecticides has been instrumental in the control of the aphid species that transmit potato leafroll virus (PLRV). PLRV can cause yield loss and tuber net necrosis, making harvested potatoes unsuitable for fresh market, processing or seed.

“The neonicotinoid class of chemistry was introduced just before the turn of the century,” Shetty says. “And since the introduction, there has been a marked reduction of PLRV in potatoes in North America. Syngenta has been a leader in the development of potato seed treatments containing neonicotinoids that protect young plants from the get-go.”

For viruses that primarily affect plants in early stages of development, producers can adjust planting to avoid times when vectors are active. Vectors will move to other hosts, eliminating concurrency of the crop and vectors in the field.

Breeding for Built-In Protection

In-field measures are the opening act in controlling plant viruses. The endgame is breeding varieties with genetic resistance.

All plants have natural defense mechanisms, including resistance to viruses. Breeders select for these beneficial genetics for built-in protection. “In extension, we like to refer to resistant varieties as the low-hanging fruit,” Byamukama says. “They do not cost much more than susceptible varieties, and, if plants do become infected, they help reduce the severity of symptoms to protect crop yield and quality.”

In the world of produce, quality is of utmost importance and can make or break a crop. Preventing viruses in fruiting vegetable crops, such as tomatoes, is a must due to the market’s strict quality standards.

“When growing fruiting crops, pesticide use is highly restricted once the fruit is developed. “The ability to leverage genetic resistance as a primary solution is critical,” says Gregori Bonnet, Syngenta seeds principal scientist, who leads a team of trait project leads dedicated to developing genetic resistance in fruiting crops.

According to Ruud Kaagman, global crop unit head for tomatoes, Syngenta screens thousands of tomato lines, and wild material, annually to identify those that exhibit natural resistance to viruses.

“Syngenta has a global center of excellence with the resources and knowledge to solve major disease issues,”

Kaagman says. “We are able to identify sustainable solutions in addressing potential outbreaks long-term by combining different resistances and resistance mechanisms.”

Tobamoviruses, a diverse group of viruses that caused severe outbreaks in tomatoes in recent years, are a primary focus for Syngenta. Tomato brown rugose fruit virus (ToBRFV), which first emerged in Israel in 2014, has spread to tomato fields and greenhouses across the Middle East, Europe, Mexico, North America and other parts of the world. ToBRFV damages the quality and yield of tomato crops and has forced the temporary shutdown of some major greenhouse operations.

Earlier this year, Syngenta introduced its second beefsteak tomato variety with resistance to ToBRFV and plans to introduce broad resistance into its full portfolio of tomato varieties over the next several years.

In potatoes, the USDA is working closely with industry partners to encourage the adoption of resistant varieties through grower education.

“We have multidisciplinary grants focused on viruses that cause necrotic defects in tubers and have done PVY demonstration plots in Washington, Wisconsin and Maine with as many as 20 varieties, specific to each region,” Whitworth says. “These real-time educational experiences show growers how the virus is expressed in plants and allow us to focus on how resistant varieties, combined with cultural practices, can prevent viral infection and protect crop yield and quality.”

1. Lefevre, Pierre, Darren P. Martin, Santiago F. Elena, Dionne N. Shepherd, Philippe Roumagnac and Arvind Varsani. “Evolution and Ecology of Plant Viruses,” *Nature Reviews Microbiology*, 2019.
2. “Soybean Viruses,” Soybean Research & Information Initiative, North Central Soybean Research Program, soybeanresearchinfo.com/diseases/soybeanviruses.html.

UNDER THE MICROSCOPE

Dubbed the invisible foe by plant pathologists Rose C. Gergerich and Valerian V. Dolja,¹ viruses can pack a small but mighty punch. Viruses impact virtually all crops to some extent. One of the aspects that makes viruses difficult to identify and manage is their size. Viruses are the smallest of all known organisms, typically ranging from 5 to 300 nanometers in size. Specialized lab equipment is required to detect their presence and determine their identity.

“Because you don’t necessarily know what the virus is by looking at it through an electron microscope, you have to use other technologies, such as genome sequencing and polymerase chain reaction (PCR) or antibody detection methods, which can take months in some cases,” says Steven Whitham, Ph.D., professor of plant pathology and microbiology at Iowa State University.

Whitham works with colleagues who frequently visit Iowa soybean fields to find plants that are exhibiting abnormal, potentially yield-reducing symptoms. He determines if viruses are present and classifies them using advanced diagnostic technologies such as next-generation sequencing.

“As a plant pathologist, I always have to think about the pathogen, the hosts, the environment and how they interact with one another,” Whitham says. “It’s important to know which viruses are present and understand how these interactions continually change. A virus can replicate quickly within a living cell. Once that process starts, there’s really nothing you can do to prevent its replication within the host plant.”



“A virus can replicate quickly within a living cell. Once that process starts, there’s really nothing you can do to prevent its replication within the host plant.”

—STEVEN WHITHAM, Ph.D.
Professor of Plant Pathology and Microbiology
Iowa State University

1. Gergerich, Rose C., and Valerian V. Dolja. “Introduction to Plant Viruses, the Invisible Foe,” *The Plant Health Instructor*, 2006. DOI: 10.1094/PHI-I-2006-0414-01.





They Saved an Industry

An unprecedented threat leads to extraordinary collaboration across disciplines in the peanut industry.

By Savannah Farrington

Illustration by Marysia Machulska



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ecalling a visit to a peanut field outside of Tifton, Georgia, in the late 1980s, Timothy Brenneman, Ph.D., University of Georgia (UGA) plant pathologist, says, “I remember walking out of that field scratching my head because this was a new type of beast that we were not used to dealing with.”

Brenneman was responding to a report of an unknown disease infestation. He and Albert Culbreath, Ph.D., a fellow UGA plant pathologist, walked the field but could not identify the disease, let alone the cause. The unknown beast turned out to be tomato spotted wilt virus (TSWV). That day set the stage for a three-decade war between the disastrous disease and a cross-discipline team of researchers, extension personnel and industry leaders. This collaboration brought the Southeast’s peanut industry back from the brink of disaster. The team won the battle, but the war continues.

Detection of Threat to Peanut Industry

First discovered in Texas in 1971, TSWV didn’t pose a significant threat to the rest of the U.S. peanut crop until it moved into the Southeastern states. Severe outbreaks of TSWV in peanuts occurred as the insect vectors for the virus — most commonly tobacco thrips (*Frankliniella fusca*) or western flower thrips (*Frankliniella occidentalis*) — transmitted TSWV. In some regions of Georgia, peanut fields saw infection rates ranging from an estimated 40% to nearly 100%.

Culbreath remembers that when he began working with Jim Demski, Ph.D., UGA plant virologist, and Jim Todd, Ph.D., UGA entomologist, they suspected the horrendous possibilities of TSWV. “We really didn’t know exactly what the potential damage was,” Culbreath says, as he recalls that first encounter with TSWV. “Ultimately, we suspected it had great potential, and, unfortunately, we were correct.”

The disease spread rapidly, and leaders in the Southeast feared losing the region’s peanut industry, which is a significant economic driver. However, an interdisciplinary team known as the Spotted Wilt Eradication Action Team (SWEAT) rose to the challenge.

Hard Work and SWEAT

SWEAT, an acronym that Culbreath notes is highly fitting when he recalls the team’s long hours in the field, quickly garnered support from Southeastern peanut researchers determined to find solutions for the puzzling disease.

“It was not like we all got together and said, ‘We’re going to put this team together to work on spotted wilt,’” Culbreath says of SWEAT’s origin. “Most of us involved recognized the necessity of it [SWEAT], both in terms of the scope of the problem and because, early on, no single project had the resources to achieve the progress we’ve since made with spotted wilt. The teamwork was born out of necessity. We didn’t have a choice.”

“Every year, it seems a different factor is thrown in with this virus, and it’s a challenge to keep it in check. But thankfully, there are people from all over contributing to the management of this virus.”

—WILSON FAIRCLOTH, Ph.D.
Agronomic Service Representative
Syngenta



SWEAT has gone through many changes in the past 30 years, with notable players in the peanut industry pitching in and creating management strategies for the challenges the virus poses each year. Many management strategies developed by the team, such as the discovery of resistant varieties, remain successful today.

Solutions for TSWV

William Branch, Ph.D., UGA endowed seed development professor in peanut breeding and genetics, developed Georgia Green, the first popular cultivar with resistance to the virus. Georgia Green worked in concert with the other practices identified for managing TSWV such as mid-May planting, increased plant population, at-plant insecticide (phorate) application, twin-row-pattern spacing and strip tillage. This integrated approach was critical in reducing disease losses since no single component provided the protection needed. The genetic resistance in Georgia Green was a key component, and peanut breeders in the Southeast responded by developing more cultivars resistant to spotted wilt.

Investments in molecular studies have improved researchers' understanding of the virus. "But there's still a lot we don't know," Brenneman explains, "and in many ways, we still rely heavily on genetic resistance."

Although management strategies haven't completely eradicated the virus, research over the last few decades has produced tools to identify peanut disease pressures throughout the growing season.

Risk Index Established 26 Years Ago

The Spotted Wilt Risk Index for peanuts, created in 1996, assigns risk values based on the symptoms of TSWV to determine the most effective integrated approach to manage the virus. Culbreath helped develop the index, but credits Steve "Bug" Brown, Ph.D., UGA extension entomologist, as the "father" of the project. Using that index, now known as Peanut Rx, farmers can determine a field's disease and TSWV risk level. This allows farmers to make disease management plans at a field-by-field level. Peanut Rx was initially developed and is reviewed each year by peanut specialists at the University of Georgia, the University of Florida, Mississippi State University, Clemson University and Auburn University. Today, Peanut Rx helps growers evaluate their risk not only for TSWV, but also for leaf spot and white mold.

TSWV Today

Wilson Faircloth, Ph.D., Syngenta agronomic service representative, explains that, even after all these years, the common challenge for growers managing TSWV in peanuts remains the unpredictable factors that initially cause the disease.

"Last year, some peanut fields had trouble with germination, and that was a big contributor," Faircloth says. "But

IN THE KNOW

The Peanut Rx sheet offers growers a valuable tool for assessing a field's disease risk, including its risk for tomato spotted wilt virus (TSWV), using a simple four-step process that assigns points for various factors that can make the disease more likely.


TSWV Risk Factors	Risk Points Assessed to Factors Range From
Variety Selection	5 to 30
Planting Date	5 to 30
Plant Population (final stand, not seeding rate)	5 to 25
Insecticide Used at Planting	5 to 15
Row Pattern	5 to 50
Tillage	5 to 15
Herbicide Use	0 to 5

Once points are assigned and tabulated, growers can see the level of risk that a particular field has for TSWV.

TSWV Levels of Risk	
Low Risk	65 or less
Moderate Risk	70 to 110
High Risk	115 or more

With this information, growers can then formulate a management plan to mitigate the risk of TSWV on a field-by-field basis, including steps such as using less-susceptible varieties and adjusting planting dates.

For more detailed information about your TSWV, leaf spot or white mold disease risk index, talk to your local Syngenta representative or visit syngenta-us.com/peanut-doctor. You can find Peanut Rx sheets for four key U.S. peanut-growing regions on this website.



this season, seed germination and quality were better, which led to good stands and just a perfect early season. We also had some adequate rains. Then one day we walked out and went, 'Oh no, what's going on?' Every year, it seems a different factor is thrown in with this virus, and it's a challenge to keep it in check. But thankfully, there are people from all over contributing to the management of this virus."

The day of TSWV's eradication isn't here yet, but the progress made so far is a testament to a successful, ongoing collaboration within the peanut industry. 🌱



MORE THAN MEETS THE EYE

**Fungicides protect crops from diseases,
but they can also provide additional
benefits. | By Doug Hampel**



(Left): The right nozzle is essential for effective coverage of crops when applying fungicides, which help keep crops healthy.

(Right): Fungicides boost yield potential when applied to corn, as in this cornfield at Seven Springs Farms in Cadiz, Kentucky.

IN

2020, Seven Springs Farms in Cadiz, Kentucky, had a cluster of four farms that shared fence rows and should have had comparable yields. But, they didn't.

One farm wasn't treated with a fungicide because it included a seed grower's test plot. The treated farms averaged 231, 226 and 228 bushels per acre (bu/A). The untreated farm averaged 205 bu/A.

"Needless to say, we aren't skipping fungicide applications for test plots anymore," says Nick Woodruff, technology manager at Seven Springs Farms.

Corn Growers See Fungicide Benefits

Crops undergo a constant struggle to maximize genetic potential in the face of root, stalk and foliar diseases, as well as stressful environmental conditions. Perpetually reacting to both biotic and abiotic stressors, plants constantly fight to achieve optimal performance. Fungicides are a key tool growers use to mitigate damage from stress and diseases that can negatively impact their bottom line. But certain fungicides, such as strobilurins and Adepidyn® technology, which are ingredients in Miravis® Neo fungicide, or Solatenol® technology, an ingredient in Trivapro® fungicide, can also provide plant health benefits lasting into harvest and driving up yield potential. As such, row crop growers are rethinking the way they incorporate fungicides into their input decisions.

"The decision to invest in crop inputs is typically driven by the grower's desire to maximize yields," says Tyler Harp, technical product lead at Syngenta. "The 2021 season saw favorable gains in commodity prices, which helped underscore the value of fungicide applications to increase yield. And, although most corn acres remain untreated, treated acreage has steadily increased over the last 20 years as growers continue to realize the value and benefits of fungicide use on corn as well as other row crops, regardless of the current commodity prices." Currently, about 20 million acres of corn are treated with a fungicide, up from less than 1 million in the late 1990s.

Controlling Southern Rust

Seven Springs Farms incorporates fungicides into its annual business plan. Established in 1994 by Joe Nichols, managing partner and 2010 Kentucky Farmer of the Year, Seven Springs Farms now encompasses nearly 30,000 acres across multiple counties in western Kentucky. The operation consists of row crops, cattle, tobacco, excavating and straw blanket production.

Southern rust has been an agronomic challenge at Seven Springs Farms for several years. The disease robs corn of nutrients and affects plants' ability to manage water loss, which can lead to reduced lodging and reduced yields. To manage southern rust, the operation applies Trivapro, which they've found provides the best control. However, it isn't just the threat of southern rust that drives input decisions at this farm.

"Our decision to apply corn fungicide is now based more on yield potential than on disease pressure," Woodruff says. "We've seen improvements of 20+ bu/A on check strips from yield benefits alone."



PERMANENT ROOT HEALTH

When growers apply fungicides and other inputs to permanent crops, such as tree nuts, grapes and citrus, the carryover effects from one year to the next are relevant to lifelong production.

"A grower planting almond or pistachio trees may use fungicides for *Phytophthora* root rot and may or may not see immediate benefits in the current crop year," says Garrett Gilcrease, Syngenta agronomy service representative in Hanford, California. "But since the grower enhanced the plant health of the crop, it helps long term."

John Taylor, Syngenta agronomy service representative in North Palm Beach, Florida, sees a similar thought process when citrus growers make input decisions, particularly where citrus greening is a major factor.

"Citrus greening has made the crop much more unpredictable," Taylor says. "Growers find it much more challenging to predict benefits and returns of all their inputs." Supporting root development, however, reaps benefits for healthy and stressed trees. One way to do that is by controlling *Phytophthora*, which can be managed but not eradicated.

Taylor works with growers who use Orondis® and Ridomil Gold® fungicides to manage *Phytophthora* and thus support healthier roots and increased root mass. Growers, Taylor says, should consider ongoing fungicide applications as a way to protect their investment.

"Even in years of light disease pressure, timely fungicide applications can help reduce inoculum and improve root mass," Taylor says. "This puts the grower ahead when the disease inevitably rebounds."

Healthy orange groves like this one in Florida benefit from regular fungicide applications, even in years when disease pressure is light.

(Inset photo): This tree in LaBelle, Florida, has symptoms of citrus greening, a disease that has devastated the Sunshine State's citrus industry.



In some parts of the U.S., disease epidemics can be destructive, and fungicide applications are driven by consistently high pressure. In other locations, disease pressure varies year to year.

“A well-placed fungicide application that provides plant health benefits still protects crops from potential disease outbreaks,” Harp says, “while also increasing the efficiency of the crop and management of abiotic stresses, or environmental pressure like hail or windstorms.”

In recent years, Seven Springs Farms had light disease pressure at the time they made their application decisions. “We’ve done some checks in the past where we have shown 20+ bu/A increases in light disease years,” Woodruff says. “If we have a farm that we expect to have a high yield potential, we are going to spray it with fungicide, regardless of disease pressure.”

Increase Crop Resilience

Beyond disease control and easing stress, the physiological plant health benefits of fungicides include prolonged duration of green leaf tissue, improved water and nutrient-use efficiency, and enhanced energy (photosynthetic) efficiency.

“The physiological effects on crops increase overall efficiency of energy production and water use, which allows the crop to better withstand abiotic stresses — such as drought, humidity and extreme temperatures — along with biotic stresses from diseases and insect pressure,” Harp says. Syngenta fungicides, such as Miravis Neo and Trivapro, typically provide a delayed senescence and/or extended green leaf duration leading up to harvest, ensuring maximum late-season grain fill and higher yields.

The symbiotic relationship between healthier plants and higher yields starts with ensuring crops are cleaner and greener, Harp says, meaning diseases are under control and the plants’ overall health is maintained. Greener leaves allow plants to capture more light. That light, referred to as “photochemistry” in the plant, is important for optimal energy production and allows for higher yields. Greener plants also hold more water, ensuring better conservation and efficient use of water and nutrients. In corn, plant health fungicides promote a healthier and thicker stalk, increasing harvest efficiency and potentially contributing to higher yields.

Three Factors for Higher Yield Potential

“All three of these factors — more light capture, better conservation of water and nutrients, and superior harvest efficiency — contribute significantly to a healthier crop and higher yields,” Harp says.

Woodruff recognizes how fungicides help improve plant health in addition to boosting yield potential, and he specifically likes the standability late in the fall because it holds crops up better for harvest.

“Across 56 locations in the Corn Belt from 2018 to 2020, including many with little or no disease severity reported, Miravis Neo provided just over 15 bu/A on average increase in yield over the untreated across all locations,”¹ Harp adds. “In soybeans, we have found yield increases of ~6 to 9 bu/A over untreated in fields previously scouted and reported as not requiring a fungicide application.”¹ 🌱

1. “See the Difference in Corn with Miravis Neo.” 2020 Corn Fungicide Trials - Miravis Neo | Syngenta US, Syngenta, syngenta-us.com/p/boost-your-bushels/trials/corn/neo/index.html. Assuming representative of average user experience and supported by reproducible data.

Strategize for Problem Weeds

Combine planning, technology and flexibility to overcome weed control obstacles.

“When I started farming 25 years ago, cocklebur and johnsongrass were our main problems,” says Brad Outland, a farmer in Hopkinsville, Kentucky, who raises corn, soybeans and wheat. “Today, we fight glyphosate-resistant marestail and pigweed in soybeans, while johnsongrass continues to be an issue in corn and soybeans.”

Herbicide-resistant weeds and seed trait technology influence his plans each year. To effectively protect crop yields, Outland develops specific weed control programs that require step-by-step planning based on the crop to be planted.

Identify Weed Problems

“The first step is knowing which weeds are most problematic,” says Bill Johnson, Ph.D., professor at Purdue University. “Farmers usually target one or two major weeds, but they also need to know the next five or six species in a field to build a program that handles the entire spectrum.”

Prashant Jha, Ph.D., extension weed specialist for Iowa State University, recommends also considering herbicide performance over the past five years. Noting weeds that survived past treatments helps farmers understand weed seed banks.

Researchers and ag retailers emphasize scouting throughout the season to identify more-prevalent, harder-to-control weeds:

- Early-season scouting confirms weed spectrum.
- Following each herbicide application, scout to monitor performance.
- Scouting throughout and at end of season can catch late-emerging weeds or escapes that can produce seed.
- After harvest or frost, walking fields reveals weeds likely to cause problems next season.

Select Chemistries and Traits

Johnson expects weed identification to be critical for 2022. He recommends residual herbicides as a plan’s backbone, bearing most of the weed control pressure. Then post-emergence herbicides clean up escapes.

Josh Bailey, marketing manager for Nutrien Ag Solutions based in Hopkinsville, Kentucky, believes that farmers will need trait platforms with multiple post-applied options this season.

“With weed control, you get what you pay for,” he says. “You can develop a good weed control program, or you can get a cheap weed control program. It’s hard to get both. If you spend less, you’ll control fewer weeds.”

Bailey recommends using multiple modes of action and overlapping residuals in every crop. He views any weed that emerges as an escape.

“The easiest way to control a weed is to never let it come up,” he says.

As a farmer, Outland relies on his agronomist for scouting. He picks trait packages compatible with chemistries likely to knock out resistant weeds and prefers herbicides containing three modes of action, especially in corn.

Mark Kitt, Syngenta technical product lead for corn herbicides, says a sound two-pass weed resistance management

“You can develop a good weed control program, or you can get a cheap weed control program. It’s hard to get both. If you spend less, you’ll control fewer weeds.”

—JOSH BAILEY
Marketing Manager for Nutrien Ag Solutions
Hopkinsville, Kentucky



program in glyphosate-tolerant corn starts with Lexar® EZ or Lumax® EZ herbicides applied preemergence, followed by Acuron® GT herbicide applied post-emergence to weeds less than 4 inches tall.

“To manage resistant weeds, use products like Acuron GT, which contain active ingredients with multiple effective sites of action to control targeted species. Acuron GT uses three sites of action and four active ingredients for knockdown and residual control of tough weeds,” Kitt says.

In soybeans, Boundary® 6.5 EC, BroadAxe® XC and Prefix® herbicides each contain two complementary active ingredients that provide preemergence control of annual grasses and small-seed broadleaf weeds, such as waterhemp and Palmer amaranth, according to Pete Eure, Syngenta technical product lead for soybean herbicides.

“Following this with Tavium® Plus VaporGrip® Technology in dicamba-tolerant soybeans or tank-mixing Sequence® herbicide

in other systems delivers overlapping residuals, increasing the level of control,” Eure says.

Diversify Weed Control Strategies

Crop rotation, tillage, row spacing and cover crops help manage tough weeds. Some crops, such as corn, have more herbicide options for resistant weeds. Using multiple modes of action in different crops supports herbicide stewardship.

Jha explains that scientific research at Iowa State University demonstrates benefits of cultural and mechanical practices for controlling resistant waterhemp. In trials, a high-biomass cereal rye cover crop planted before soybeans reduced waterhemp emergence 30% to 40%, while 15-inch soybean row spacing cut its emergence 15% to 20%.

Jha is also studying aggressive harvest weed seed control strategies to reduce weed seed banks. Chaff lining uses a combine attachment to separate soybean straw and chaff. Most weed seeds stay in the chaff, deposited in a narrow windrow behind the

combine. This concentrates the area for weed control next season.

“Seed destructors also attach to combines,” Jha says. “They capture and pulverize about 65% of weed seeds, significantly reducing the seed bank.”

With a clear understanding of the weed spectrum and tools available, farmers can customize programs by field to successfully control weeds. Investing in residuals and accurate application, along with agronomic practices, will improve seasonal and long-term results.

“Every operation is unique, and no solutions are one-size-fits-all, but every operation can find a cultural practice that fits,” Johnson says, “whether that’s a more advanced practice like a seed destructor or chaff lining, or simply focusing on waterways, field borders and entries.”

“Farmers need programs with diverse weed control strategies,” Johnson says. “Treating herbicides like natural resources that must be used wisely will prevent us from exhausting their benefits.” 🌱 STORY BY LAURA TEMPLE

Preemergent residual herbicides, such as Boundary 6.5 EC, and post-emergent herbicides, such as Tavium Plus VaporGrip Technology, are important technologies in a proactive weed control plan.



Tavium Plus VaporGrip Technology is a Restricted Use Pesticide.

Understanding Grower Needs

A retailer partnership with Syngenta delivers local data and service to add value for Illinois farmers.

There isn't much that's more valuable to a grower than seeing how new products and practices work locally. It's the sort of thing that gets noticed. It's also the sort of thing that Stacey Wright, sales representative for Pitchford Elevator; Barry Beaupre, sales representative at Syngenta; and Trent Funk, owner of Funk Farms, make happen with their own test plot.

Consistency Is Key

Pitchford Elevator is a full-service retailer providing fertilizer, crop protection products and seeds primarily to corn, bean and wheat growers in Richview, Illinois. "When it comes to providing growers with the best recommendations for their farms, local partnerships are essential," Beaupre says, "because growers know that you understand their needs."

Wright has worked with Beaupre for more than 25 years and says Beaupre's consistency is what has made their partnership last.

"Barry has always been a constant and a good person to work with," Wright says. "Sometimes, with other companies, you meet with a different sales rep every time, which makes it hard to develop a trusting relationship. Barry is so close to us that it helps keep the relationship strong, and our growers get to know him."

Funk Farms, which is also located in Illinois, primarily grows corn, soybeans, wheat and milo. Fifteen years ago, Funk switched from his former retailer to Pitchford Elevator. Funk had a preexisting relationship with Wright and was confident in Wright's ability to meet the needs of Funk Farms.

"Pitchford served our farm as it grew and helped make our operation more efficient," Funk says. "The prices and services of the products were also very reasonable."

Local Data Wins

Wright says that although growers see lots of trials, they don't always get to see them right at their back door. Wright knows

"I am there to help growers achieve a good return on investment and provide what they need. I don't consider myself a sales rep so much as a business partner."

—BARRY BEAUPRE
Sales Representative
Syngenta



growers want to see trials working in their locations with fields mirroring their own. That means the same soil and same weather patterns. Results from

other geographies don't always translate well to areas outside those geographies, and that frustrates growers. Wright and Beaupre have teamed up with Funk to use Funk's local farm to conduct trials to help neighboring farmers avoid those frustrations.

Their test plot, a 30-acre field site located on Funk Farms, uses block trials to research problems, find answers and understand the challenges local growers are experiencing. The site helps Wright and Beaupre understand growers' concerns and offer practical solutions that provide the best yields. A farm that participates in field trials within 15 miles of other growers provides a treasure trove of pertinent data for use in those growers' fields.

"It is almost like tests from their own farms because the factors are so similar: soil, weather, etc.," Wright says. "Even the growers who already trust you will trust you even more when they can see your trial results for themselves."

Wright brings his customers to Funk Farms to view the trial results in their field trials, so they can make informed decisions after

(Left to right): Stacey Wright, sales representative for Pitchford Elevator; Trent Funk, owner of Funk Farms; and Barry Beaupre, Syngenta sales representative, use their field trials to test products under local growing conditions at Funk Farms in Elkhart, Illinois.



seeing how products affect crops on farms like their own.

“We walk from one part of the field to the next, so growers see products, trials, yield results,” Wright explains. “They ask questions and see product performance in real time.”

Trial Shows Best Herbicides

When growers in the area began having issues with weed resistance, Wright, Funk and Beaupre designed a trial showing which herbicides worked the best and provided the most residual control. They applied herbicides and evaluated results, so the team could make the best grower recommendations.

“It wasn’t a seed issue,” Wright says. “It was that weeds had developed resistance to the herbicides, and they were no longer working on the weeds.”

In addition to showing bare-ground studies, the partners brought in agriculture experts — like Jason Bond, Ph.D., professor of plant, soil and agricultural systems at Southern Illinois University, and Bryan Young, Ph.D., professor of weed science at Purdue University — to discuss proper weed management with growers.

Local Partnership Builds Trust

Everybody wins in a good partnership because everybody is happy with the results. The idea is to build trust and confidence between the growers, retailers and Syngenta.

Funk says a partnership like this one is valuable because it means quicker service in the face of problems. He says it’s a key factor in the success and growth of all parties involved.

“Barry is a very hands-on rep and is instrumental in trials,” Funk says. “It’s not just what we learn, but also what he learns for his sales programs.”

“I trust Barry, and we’re in it for the long haul,” Wright says. “It all circles back to trust.”

“Retailers have to trust Syngenta sales reps, and the grower has to believe that both have the best interests of growers in mind,” Beaupre says. “I am there to help growers achieve a good return on investment and provide what they need. I don’t consider myself a sales rep so much as a business partner.”

STORY BY DANA M. ANTHONY

EDITOR’S NOTE: This article is part of a continuing series celebrating the strong partnerships that help propel agriculture forward. Find related stories online at syngentathrive.com/community.

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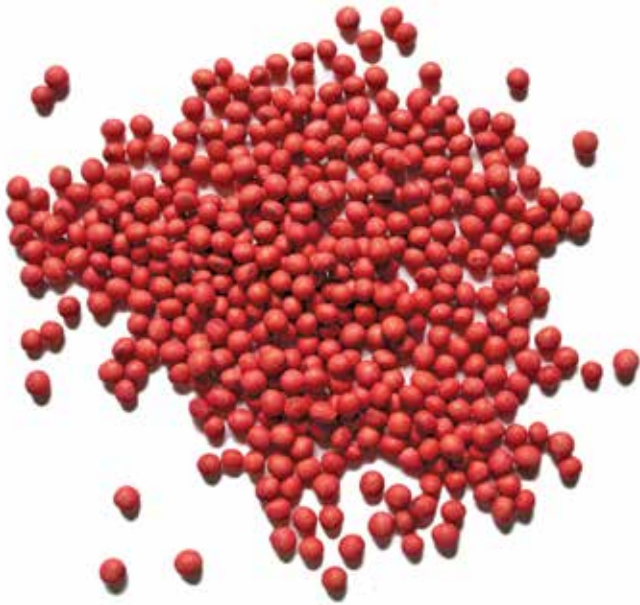
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What's in Store

Read about 2021 data for corn hybrids and soybean varieties, a new resistance-focused website, upcoming events, and industry awards.

PRODUCT PERFORMANCE

Corn and Soybean Yield Data Available Online

Corn and soybean yield results show that NK[®] hybrids consistently performed under varied pest pressure — from corn rootworm to tar spot — and under extreme conditions, including damaging winds and drought. In particular, the new NK Field Forged Series™ products demonstrated their worth in field trials by consistently topping competitor products.

As yield-robbing problems pervaded cornfields this season, top-of-the-line NK corn genetics demonstrated resilience. NK hybrids were particularly successful against tar spot.

Check out corn yield results near you at nkseeds.com/cornresults. For soybean results, go to nkseeds.com/soyresults.





Matt Dolch (left), Syngenta district manager for the western Corn Belt and NK retail channel, and Mike Egger (right), master seed adviser at Central Valley Ag Cooperative in York, Nebraska, work together to provide seed options to fit grower needs.

NEWS

Taking Action Against Resistance

As insects and plants evolve, they sometimes develop resistance to active ingredients in commonly used pesticides. To combat resistance issues, the United Soybean Board launched Take Action (iwilltakeaction.com).

“Our goal in providing recommendations and facilitating discussions through the Take Action platform is to create awareness of sustainable integrated pest management strategies that reduce over-reliance on pesticides and protect the effectiveness and value of available products,” says Emmanuel Byamukama, Ph.D., associate professor and South Dakota State University Extension plant pathologist. Syngenta is among the industry stakeholders that support Take Action.



UPCOMING EVENTS

As you look toward the new year, it's time to begin adding important agricultural events to your calendar.

JAN. 31–FEB. 2:
Annual National Conservation Systems Cotton and Rice Conference,
Jonesboro, Arkansas

FEB. 16–19:
National Farm Machinery Show,
Louisville, Kentucky

FEB. 25–26:
Mid-South Farm & Gin Show,
Memphis, Tennessee

MARCH 10–12:
Commodity Classic,
New Orleans, Louisiana

Visit syngenta-us.com/tradeshows for information about upcoming events.

AWARDS AND HONORS

Iowa Man Named 2021 Professional Farm Manager of the Year

Kyle Walker has been named the 2021 Professional Farm Manager of the Year.

Transforming farms, exceeding client expectations and improving long-term sustainability drive Walker to amplify the true potential of each farm he manages. Walker began working in asset management in 2006. He has been with Peoples Company in Indianola, Iowa, since 2014, focused on large assets and growing divisions.



Kyle Walker

“He’s just got that multitasking ability to relate to a lot of different people, and people take him seriously,” says Steve Bruere, president of Peoples Company. “It’s been interesting to see Kyle evolve from that farm management role — and broaden his skill set to work across a number of geographies and really become a leader.”

Walker wants to leave a legacy of trustworthiness, knowing that at the end of the day he did the right thing. “Winning this award and being honored by my peers means the world to me,” Walker says. “It makes all the long nights and early mornings worth it.”

To learn more about Walker and the Professional Farm Manager of the Year Award, visit the website farmmanageroftheyear.com.

FFA Bestows Honors Upon Syngenta Employees

Kathy Eichlin, head of internal communications for Syngenta Crop Protection in North America, and Robin Thomas, early talent acquisition manager for Syngenta in North America, were recently awarded Honorary American FFA Degrees.

Both Eichlin and Thomas were recognized for the exceptional service they’ve provided to the National FFA Organization, specifically for agricultural communication and education.

FFA members learn about agriculture and practice leadership skills at many venues, including at the organization’s annual FFA Convention.



(Above): Robin Thomas (top) and Kathy Eichlin (bottom), two Syngenta employees, were honored this year for their exceptional service to FFA.



Eichlin says she appreciates FFA's recognition, which "continues to shape and guide the future leaders of the agriculture industry."

Thomas, who was active in 4-H and FFA during her childhood on a West Virginia farm, once served as her state's FFA vice president. Now leading early talent acquisition at Syngenta, Thomas says, "I'm grateful that Syngenta provides me the opportunity to serve FFA, the organization that gave me so much."

The names of Honorary American FFA Degree recipients are permanently recorded as recipients of the highest FFA honor, and recipients receive a plaque and medal.

For more information, visit ffa.org/participate/awards/honorary-awards.

Syngenta Employees Honored at CropLife America 2021 Annual Meeting

At the 2021 CropLife America (CLA) annual meeting, Caydee Savinelli, stewardship team and pollinator lead, won the Pillar Award, which recognizes an individual who has shown dedicated service to the pesticide industry and CLA over the last year. Savinelli has been the Syngenta lead on all pollinator-related activities for 8 years and consistently demonstrates her willingness to work on this challenging topic as well as many others, including the Endangered Species Act. She works collaboratively with all interested stakeholders, seeking and finding common ground. During Savinelli's time on the stewardship team, she helped establish many pollinator habitat sites under the Operation Pollinator banner — including all Syngenta facilities, many golf courses and a large number of grower fields.



Caydee Savinelli

At the same meeting, Tony Burd, senior regulatory stewardship manager, won the Rising Star Award, which recognizes emerging leaders in the agricultural community who've shown exceptional growth and increased levels of leadership and responsibility within the industry. Burd has worked with many stakeholders at the highest levels of the industry. His contributions to CLA and the pesticide industry regarding the Endangered Species Act and the consultation process between the Environmental Protection Agency, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service are incomparable. An advocate and champion for diversity and inclusion, Burd has stood up for fellow employees when others were less sensitive.

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Passing It On

The 2021 #RootedinAg Contest winner's grandpa shared his knowledge and passion — and inspired a love of farming.

As an 8-year-old, first-year 4-H member, Austin Walter of Grand Ridge, Illinois, entered a county essay contest. He won a heifer.

"We raised crops and ran a feedlot, so I thought we had cows," he says. "I had no idea raising a heifer was completely different than finishing steers."

That's when Austin's grandpa, Ralph Walter, stepped in. Ralph raised shorthorns early in his farming career. He switched his livestock business to a feedlot in the 1970s. But he retained his knowledge of raising heifers and passed it on to his eager-to-learn grandson. It was a win for both.

After graduating from Texas Tech University, Austin chose to return home to continue the family tradition of farming. Now a fifth-generation farmer, Austin raises Angus and Simmental show cattle with his younger brother, Dalton, in addition to growing corn and soybeans and running the feedlot with his dad, Darren, and his grandpa.

Last spring, Austin wrote an essay for the 2021

#RootedinAg Contest, honoring his grandpa for being his ag mentor. And, once again, they both won.

"Austin's #RootedinAg entry, like so many, speaks to the tremendous dedication of our farmers who successfully manage strong operations and take the time to ensure the tradition continues in a way that delivers value to their families and supports a strong U.S. ag industry," says Pam Caraway, marketing communications lead at Syngenta.

Austin says his grandpa spent years teaching him to properly raise, feed and care for cattle, inspiring him to build a life and career in agriculture. "I'm blessed to be able to work alongside Grandpa," he says. "He's the anchor of our farm. He still wants to be out here all the time."


Ralph describes his grandson as astute, a perfectionist who practically lived with his calves. "I told him to make sure they always had water and enough feed," he says. "In the show ring, he learned to treat his competitors as he would want to be treated."

The #RootedinAg prize from Syngenta allows Austin to donate \$1,000 to a local charitable or civic organization in his grandpa's name. He chose to pass on his family's passion and commitment by supporting agricultural education for Grand Ridge Grade School, including the new Grand Ridge Junior High FFA program.

The donation will support science and agriculture activities, according to Grand Ridge Grade School Superintendent Ted Sanders. "Agriculture is the heart of our community," Sanders says. "The Walter donation will help start our FFA program for sixth to eighth graders and extend the Illinois Agriculture in the Classroom program. We are very grateful for this help."

The other finalists for the 2021 #RootedinAg contest were farmers Craig Converse of Brookings, South Dakota, and Natalie Doelman of West Lafayette, Indiana. Each vote cast online represents a tough decision, Caraway says.

"I'm thankful for all the online voters who help us decide the #RootedinAg program winner each year," Caraway says. "We receive submissions filled with uplifting testimonies about the people who give their time and expertise to the next generation of ag leaders."

Visit syngentathrive.com/community to read Austin's winning essay. Learn about the 2022 #RootedinAg contest at syngentathrive.com.  STORY BY LAURA TEMPLE

(Below): These cows at Walter Brothers Cattle in Grand Ridge, Illinois, are part of a family livestock business that raises its own cattle and also serves as a feedlot. (Opposite page): Austin Walter (right) credits his grandpa, Ralph Walter, (left) with teaching him how to raise heifers when he was a young boy.





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.

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