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MARCH 2019

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National Wheat Yield Contest winner Phillip Gross believes the new quality criteria in the contest could help U.S. growers keep their edge in the export market.

Cover photo by Jim Patrico

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CONTRIBUTING COLUMNISTS

EQUIPMENT SPECIALIST Steve Thompson
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FAMILY BUSINESS ADVISER Lance Woodbury

MAGAZINE PRODUCTION

PRODUCTION MANAGER/EDIT-ADVERTISING Charles Long
PRODUCTION MANAGER/ADVERTISING Tony Green
PRODUCTION MANAGER/EDITORIAL Barry Falkner
SENIOR COPY EDITOR Tara Trenary
GRAPHIC DESIGNER/PRODUCTION ASSISTANT Jennifer Richburg

ADVERTISING / CIRCULATION

PUBLISHER Matt Herman
DIRECTOR OF NATIONAL ADVERTISING Sheri Seger
REGIONAL ADVERTISING OFFICES
CHICAGO Sheri Seger (402) 301-7310
Steve Mellencamp (312) 485-0032
DETROIT Susan Hunyor (313) 600-0039
LUBBOCK Doug Marnell (806) 790-0456
MINNEAPOLIS Matt Herman (612) 812-5833
OMAHA Wade Critser (402) 980-3417
MARKETPLACE SECTION Averi Whitfield (402) 619-8168
DIRECTOR MEDIA OPERATIONS Allen Vaughan
MANAGER AUDIENCE DEVELOPMENT/
MEDIA OPERATIONS Jackie Cairnes
PRODUCTION MANAGER/DIGITAL ADVERTISING Patti Dunaway

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ACTING CHIEF EXECUTIVE OFFICER Ron Sznajder
SENIOR VICE PRESIDENT—Ag & Transportation Mark Holland
EDITOR IN CHIEF/DTN Greg Horstmeier

EDITORIAL OFFICES

2204 Lakeshore Drive, Suite 415, Birmingham, AL 35209
(205) 414-4700, (205) 414-4746 (fax)

CUSTOMER SERVICES

P.O. Box 5010, Harlan, IA 51593-0510; 1-800-292-2340
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Rapid Changes Disrupt Ag



Gregg Hillyer

► Write Editor In Chief Gregg Hillyer, 2204 Lakeshore Dr., Suite 415, Birmingham, AL 35209, or email gregg.hillyer@progressivefarmer.com.

It might seem odd to begin a keynote presentation on what farming will look like in 2045 by talking about an animated sitcom that made its network debut in 1962. But, futurist Jim Carroll did just that during our recent DTN/PF Ag Summit in Chicago.

The Jetsons was about a family living in the future—2062 to be exact. Life was depicted with all sorts of innovations such as robots, autonomous vehicles, video conferencing, virtual shopping and voice command devices. In other words, technology that's available in 2019.

"We thought the future was far away," explains Carroll, who helps companies and organizations anticipate and manage change. "In reality, it's actually here today. So much change is coming at us with greater speed and with greater intensity that your ability to adjust to the reality of what is happening will define your success."

He points to technology as the driver behind the rapid changes occurring in agriculture. But, many of the same technologies transcend across industries, fueling even more change. "All of a sudden, the inconceivable becomes conceivable," he stresses. "Multiple trends merge, the speed accelerates, and, suddenly, they become a part of everyday life."

Take health care, for example. It's using analytical predictive dashboards and devices to help determine the emergence of health-care conditions in real time. Agriculture is no different. "Think about where prescription farming takes us," Carroll continues. "It takes us to a world where we have detailed, almost-instant insight into plant health, crop growing conditions and more."

Carroll stresses that innovators everywhere are thinking big and bold, and, that will only speed up the future. He identified trends that will shape agriculture's future. They include:

► **ENORMOUS ENERGY.** Advances in electric vehicle technology, battery storage and

biofuels will eliminate the concept of darkness. Smaller batteries will collect more energy from renewable fuels and the sun during the day, and feed it back to the power grid at night. Longer battery life—coupled with advances in driverless technology—will allow tractors, trucks, drones and other vehicles to operate autonomously and for longer hours, conceivably creating 24-hour farming.

► **SOFTWARE+TECHNOLOGY=3.** A typical acre of corn with precision-farming capabilities puts out 5 gigabytes of data annually. The ability to collect this data and process it through ever-powerful computers means

every industry is becoming a software and technology company. Farmers and ranchers will be able to make smarter, more precise decisions sooner, and, their suppliers and partners will provide products and services that create greater returns.

► **REINVENTION DOMINATES.**

Apple gets 60% of its revenue from products that didn't exist four years ago. In farming 10 years from now, a significant amount of your revenue will come from methodologies—caused by acceleration of science—that you don't use today.

► **THE GAME GENERATION.** You may think your kids spending hours a day gaming is a waste of time. Not so, Carroll explains. "Farmville is coming to farming. These kids that have grown up in this virtual world of gaming will be running our precision-farming tools either on the actual farm or miles away. They are connected [wired] and collaborative, and change oriented."

Carroll adds ag's older population is struggling with the speed of change. "I encourage you to align with the future ... to a faster future. You have to change your future before it changes you."



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Where Did My Deductions Go?



Rod Mauszycki

Tax Columnist Rod Mauszycki is a CPA and tax partner with the accounting firm of CliftonLarsonAllen, in New Ulm and Minneapolis, Minnesota.

► Read Rod's "Ask the Taxman" column at **ABOUT.DTNPF.COM/TAX**.
► You may email Rod at **taxman@dtm.com**.

I recently received an email from one of my larger farm clients that has several employees who work from home. The employees expressed concern about the loss of the miscellaneous itemized deductions—home office expenses. This made me realize that the new tax laws are still causing some confusion. Clarifying the changes to Schedule A will help partners and owners understand how to account for certain expenses.

In the past, you were able to claim a miscellaneous itemized deduction (subject to 2% adjusted gross income floor) for the following:

- employee business expenses (mileage)
- uniforms and work clothes
- professional and union dues
- home office expense
- tools supplied for taxpayer's work.

These and a few other expenses are no longer deductible, including the moving expense deduction for most taxpayers (other than U.S. military on active duty).

STANDARD DEDUCTION BOOST

As an employee, this may seem like the IRS took away tremendous tax savings. However, if you look into the numbers closely, the standard deduction (if you do not itemize) is more than double the amount under the prior tax law.

In addition, for the majority of people, the new tax brackets lowered the effective tax rates. For an employee filing "Married Filing Joint," the correct question is, "Would my itemized deductions be more than the increased standard deduction if I included the disallowed miscellaneous itemized deduction?" In the majority of cases, the increased standard deduction will be greater.

If the employer deems it a substantial issue for its employees, they could set up a plan to reimburse the employees for certain business expenses. The cost versus benefit of setting up an accountable plan must be closely examined. In the end, maybe a simple "gross up" to compensation is the easier route to make the employee whole.

UNREIMBURSED EXPENSES

Unlike employees, the owners of businesses taxed as partnerships can still deduct unreimbursed expenses. This is called "Unreimbursed Partnership Expenses,"



or UPE. It is an adjustment on the owner's tax return on the same schedule the partnership K-1 is reported. One benefit of UPE is that it reduces the Self Employment (SE) income and subsequently the SE tax. One final thought: As agribusinesses use more employees who work from home, they will have to address unreimbursed employee expenses. As the labor shortage continues, this issue may be the difference between attracting and keeping high-quality employees and losing them. ///

TOOLS FROM THE PAST

QUESTION:

This medical tool was once a favorite of many doctors. What is it?



ANSWER:

This was a "bleeder" used to cut veins or arteries to get the "bad" blood out of patients.

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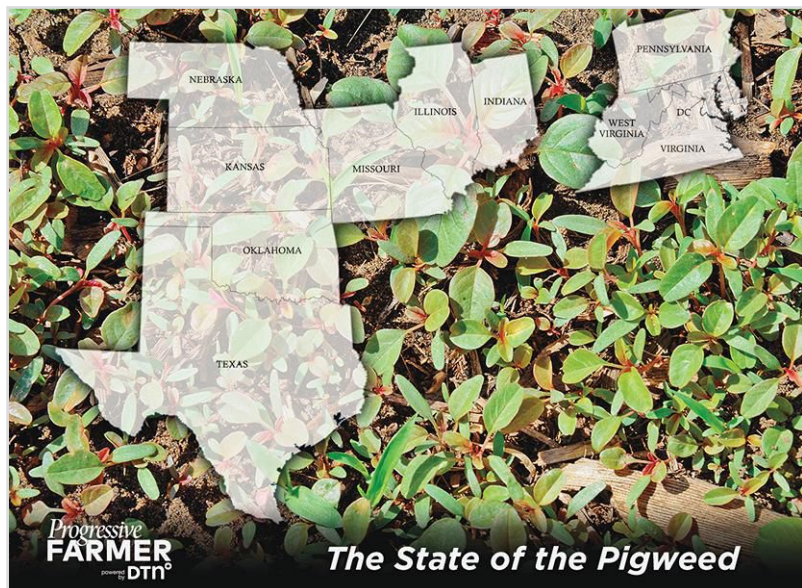


PHOTO ILLUSTRATION: NICK SCALISE

► Top Ag Stories

Read current news and extended features, such as the three-part series, "The State of the Pigweed." Many states have seen only isolated skirmishes with Palmer amaranth, but, they're braced for war.

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March 8, 2019: WASDE Report: DTN lead analyst Todd Hultman will evaluate USDA's latest estimates in domestic and world supply and demand tables.

March 29, 2019: Prospective Planting & Grain Stocks Report: Insights on U.S. crop acres and grain stocks from DTN's lead analyst Todd Hultman.

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CALL FOR ENTRIES

America's Best Young Farmers and Ranchers 2020



In the February issue of *Progressive Farmer*, we introduced the newest class of America's Best Young Farmers and Ranchers. Now, it's your turn. Join this fast-growing program by applying to be part of the class of 2020—our 10th-anniversary year.

Applications are now being taken for America's Best Young Farmers and Ranchers 2020. They are available by request, or, find the online application at www.dtn.com/nextgen.

America's Best Young Farmers and Ranchers recognizes the next generation of farmers and

ranchers who are building successful agricultural businesses and making positive impacts on their communities.

Nominees must be 40 years old or younger in the calendar year 2019. Nominations must include one letter of nomination from a person(s) familiar with the nominee's professionalism and community involvement, and one letter of recommendation from a financial institution frequented by the nominee.

It is helpful if nominations include photographs of the nominee's business and family.

Five honorees and their guests will receive an all-expenses paid trip to DTN/*Progressive Farmer's* Ag Summit in Chicago this coming December. The package includes Ag Summit registration, transportation and hotel for two. Winners will be featured in a special section included in the February 2020 edition of *Progressive Farmer*.

Completed applications must be postmarked or received by e-mail or fax by Tuesday, April 30, 2019.

FOR ADDITIONAL INFORMATION, CONTACT:

Progressive Farmer

Attn: Dan Miller

2204 Lakeshore Dr., Suite 415

Birmingham, AL 35209

EMAIL: dan.miller@dtm.com

PHONE: 205-414-4736

CELL: 205-613-6088

FAX: 205-414-4705

The Market Influence We Ignore

Still caught in the winter of 2019, but, with spring on our minds, there is a good chance you have already heard bearish price forecasts for grains in 2019. Having spoken at several farm gatherings myself, I am also guilty of pointing out that U.S. ending stocks estimates for corn and soybeans look higher again this fall. Based on DTN's early assessment, a seventh consecutive year of good crop weather appears likely.

SOYBEAN PRESSURE

Among the big three crops, the soybean estimate is causing the most concern these days as we face the possibility of a billion bushels or more of U.S. ending stocks in both 2018–19 and the new-crop season. To put that in perspective, the U.S. didn't even produce a billion bushels of soybeans until 1968, and, the highest ending surplus before this season was 574 million bushels in 2006–07.

USDA's current estimate of 955 million bushels of U.S. ending soybean stocks in 2018–19 represents 23% of annual use and statistically correlates to a \$6 cash price—a level not seen since 2006. As painful as that may be for producers to hear, there are other factors to consider before giving up on the new season.

First of all, it is still early in 2019, and, winter fundamental outlooks, like preseason sports polls, simply don't have enough information to be reliably accurate. The uncertainty level at this time of year is high.

Second, low prices themselves have a bullish influence on future markets that often goes unrecognized. I have never liked the saying, "Low prices cure low prices," because it seems like a callous way of ignoring economic hardship—a little like saying cancer cures smoking.

TREND TELLS THE STORY

Looked at objectively, however, more than 50 years of price data shows spot corn and soybean prices that start the year in the lower thirds of their five-year

ranges tend to trade higher in the year that follows. This not only goes directly against the grain of all the bearish fundamental outlooks that low prices tend to attract in wintertime, it also cautions us against taking current price trends too seriously.

Given the uncertainty of trade with China, producers are correct to be concerned about the downside risk of soybean prices in 2019. As I have mentioned before, the purchase of inexpensive soybean put options is one effective strategy to consider.

Probabilities aren't the same as guarantees, and, low probability events do happen, but, we should not ignore over 50 years of price data, which suggests the odds favor higher soybean prices in 2019. Until more is known, we need to stay skeptical of winter price outlooks. ///



Todd Hultman

► Read Todd's blog at **ABOUT.DTNPF.COM/MARKETS**.

► You may email Todd at **todd.hultman@dtnc.com**, or call 402-255-8489.



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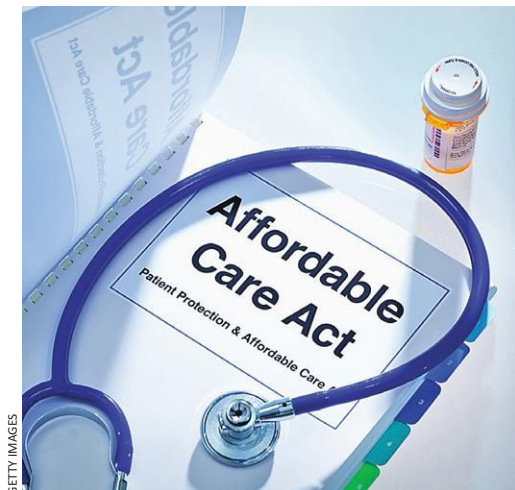
Buyer Beware on New Health Insurance Options



Katie Dehlinger

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► You may email Katie at katie.dehlinger@dtnc.com, or visit [@KatieD_DTN](https://twitter.com/KatieD_DTN) on Twitter.



Three out of four American farmers

say health insurance is an important part of their operation's risk-management strategy, according to a USDA-financed study. But, as farm finances come under increasing strain, health insurance premiums seem like they keep going up.

It's not uncommon to hear stories of farm families paying upwards of \$25,000 a year for coverage, and, it's one of the primary reasons why spouses, or even principal operators, seek off-farm employment.

Rising costs aren't the only uncertainty complicating farmers' health-care choices. The future of the Affordable Care Act (ACA), also known as Obamacare, is once again under legal challenge, and, new types of plans are beginning to proliferate.

In late 2017, Congress voted to repeal the ACA's individual mandate. Republican attorneys general from several states sued, arguing the entire law is now invalid. Remember, the Supreme Court upheld the ACA on the grounds that the mandate was essentially a tax.

In December, a Texas judge declared the law unconstitutional but issued a stay until it the appeals courts, and most likely the Supreme Court, weigh in.

The ACA remains the law of the land, but, it's in legal limbo that could extend until late this year or early 2020.

But, as many farmers and ranchers know, the ACA exchange has struggled to function as promised in rural areas. Often, only one insurer covers a wide swath of the countryside, and, the lack of competition means higher premiums and narrow networks. Unless a farmer qualifies for a subsidy—which more have because of tight incomes—buying a policy on the exchange can be costly.

NEW OPTIONS COMING

In 2018, the Trump administration loosened the rules on Association Health Plans (AHPs), opening up new options for farmers. Several states have done the same in recent years. AHPs allow people who share a regional or professional tie to band together to offer health insurance.

The result is the proliferation of new options aimed at helping farmers by offering premiums that are up to 25% less expensive than what they can find on ACA exchanges. Nebraska and Iowa Farm Bureaus are offering AHPs. Land O'Lakes also launched a new insurance plan for its farmer members in Minnesota and Nebraska in 2019, and plans on expanding to more states in coming years. AHPs have been available to Tennessee farmers since 1993.

Farmers Business Network is also offering a plan to farmers in 11 states, although, it's technically not an AHP.

In general, these plans offer lower premiums but come with potential trade-offs. AHPs are regulated by state laws. Some states require these plans to be ACA compliant—meaning you can't be charged more for a preexisting condition, and, the plan must cover important benefits like prescription drug coverage—but others don't.

So, in this new frontier of health-insurance options, it's more important than ever to do your homework and make sure the policy you purchase meets your needs, especially if you're one of the two-thirds of farmers with a preexisting condition. ///

OUR RURAL ROOTS



Memory-Filled Dishes

By Meredith Bernard

Food is my love language.

Give me good food, and, I'll forever have good memories. With a whiff of cooked greens, I'm 12 again watching my Granny stand at the stove over a pot of collards picked from my Granddaddy's garden, washed three times in the sink then crammed to overflowing in the pot liquor from a boiled Boston butt.

There were always peeled, whole white potatoes cooking alongside and a pan of corn bread in the oven. The smell of dinner would mix with the salty river air and fill the small summerhouse my farmer Granddad built.

Up to 14 of us would converge there every year. We made a thousand years of memories over a table mixed with a million laughs, a bowl full of collards, a pitcher full of sweet tea and jadeite plates hugging all the fixings.

While my grandparents aren't here to eat or laugh with anymore, I have a few pieces of my Granny's Fire King jadeite nestled in my cupboard. Every use takes me back—back to her table, simpler times and sweet memories. Many a tear has been wiped over my sink while washing and wiping that milky-green glassware.

Because food is never just food any more than time with loved ones is just time spent. Special times with special people around a table are one of the sweetest parts of life. Having those reminders and being able to share the memories, and make new ones with my own family make the dishes all the more special.

My collection continues to grow because it brings me joy, and, joy is always worth collecting. It makes me smile to think of passing along these green jewels to my children. One day, they'll sip coffee, eat greens and corn bread (like their mama and Granny made), and savor the sweet memories.

Meredith Bernard writes about farm life on her website (thisfarmwife.com) and is active on Twitter (@[@thisfarmwife](https://twitter.com/thisfarmwife)).



More Than a Drip

By Jennifer Campbell

Recently, I stood grinding feed on a frosty 30°F

morning and suddenly became conscious of a drip dangling from the end of my nose. It wasn't the first time it has happened, and, it won't be the last, but, I immediately thought of my dad.

Dad died seven years ago this month from leukemia, and, it will come as no surprise that I miss him. The missing isn't so much a conscious thought, but, more often than not, it is small things that completely catch me off guard.

A piece of soapstone like the one he always carried in his pocket to mark metal when using a cutting torch will do it. And, apparently, so will nose drips, because I was instantly transported back to winters when we were cutting wood or feeding cattle, and wondering, as kids will, how he could not realize it was there.

I've since learned firsthand that it is a drip of hard work. It's the determination to get a job done—whether it is working while freezing or from the sweat generated during a hot day. Sometimes, for me, it might be a tear of frustration or joy that hangs oblivious to everything around it.

I'm still shocked at how these small things can take my breath away and remind me of him.

There are other clues he's still here—like when my middle child is deep in thought and chews on her tongue—just the way he did. Or, when my oldest is scouting a crop field and sends me a picture of something interesting wishing she could share it with Granddad, too. Or, the look of determination my youngest gets on his face when he's solving a problem, and, the fact that as he walks away from me, I notice he has the exact same build as Dad.

So, pardon me if I take a minute after I wipe away that drip to smile and remember my dad for just a little while.

Jennifer (Jent) Campbell writes a blog called *Farm Wife Feeds* (farmwifefeeds.com). Follow her on Twitter (@[plowwife](https://twitter.com/plowwife)) and on her podcast @[girlstalkag](https://twitter.com/girlstalkag).

Planting Season 2019: Crunch Time



**Bryce
Anderson**

► Read Bryce's weather blog at **ABOUT.DTNPF.COM/WEATHER.**

► You may email Bryce at **bryce.anderson@dtnc.com**, or call 402-399-6419.

Approaching the 2019 planting

season, the phrase that keeps coming up is “crunch time.” I’ll bet that every sports fan has mentioned this phrase at one point or another. The final seconds of the fourth quarter; the last at-bat; the back nine. These instances immediately get hard-coded into our memory banks.

That’s the way the 2019 spring is shaping up, too, and for growers in many areas. From all the way north (Minnesota, North Dakota) to all the way south (Mississippi), and from west (central Kansas) to east (Ohio and Pennsylvania), there are complications from the wet and cold harvest in fall 2018 that are stacking up the workload big-time ahead of this spring season.

So, what’s ahead? Following a winter that was marked by some very cold outbreaks, with all-time low temperatures in many areas, spring has a varied look to it. In the world view, the weak El Niño Pacific Ocean warm-water event will give way to neutral conditions during the season. With the more neutral Pacific trend, indications are that temperatures will be still cool in March but will then show a rebound in April and May. Precipitation looks to be below normal east of the Mississippi River, with heavier totals and above normal west of the Mississippi. So, that certainly offers a mixed scenario; the suggestion is that eastern crop areas have a better chance for fieldwork and planting progress earlier in the season than areas farther west.

An important feature to keep in mind is that, in general, there is no drought east of the Rocky Mountains as we go into the 2019 crop year. That feature has both positive and negative implications. On the plus side, soil moisture is certainly adequate for seed germination and early growth. On the minus side, it won’t take much precipitation to turn the ground wet and slow down progress. And, following the slow and late harvest of 2018, there’s plenty of work to get done even before planting. So, yes, it’s not out of the question

to nickname this upcoming stretch of time “Crunch Time.”

Now that the stage is set for planting in the spring season, here is the forecast detail for our major crop areas:



MIDWEST

A more favorable scenario is indicated for spring 2019 than in the last couple of years. In 2018, a very warm month of March was followed by a very cold month of April, which slowed planting significantly. This year, the pattern is reversed. Forecast indications are that March will be cool—no early start to fieldwork. But, the pattern turns warmer in April and May, which suggests that planting will have a good chance of getting done in a timely manner. Precipitation is variable; but, the warmer mid- to late-spring temperatures are key to planting prospects.



See the video at
www.dtnpf-digital.com.

DELTA

Spring begins cool and dry, but then turns warm and wet, with above-normal temperatures and above-normal precipitation. Planting progress could be slowed by these conditions, possibly forcing some changes in the crop mix.

SOUTHEAST

Variable conditions are indicated for this spring season. The entire region has a cool and drier pattern early, as



“The weak El Niño Pacific Ocean warm-water event will give way to neutral conditions during the season.”

—Bryce Anderson

well as below-normal temperatures and below-normal precipitation. As the season moves on, temperatures take on a warmer tone, looking to be above normal. Precipitation prospects have a notably mixed prospect. The northern portion of the region—Kentucky, Tennessee, North Carolina—looks to be in line for normal to below-normal amounts, while farther south—Alabama, Georgia, Florida, South Carolina—appears to be on track for above-normal precipitation with the implication of some disruption in planting progress.

MID-ATLANTIC AND NORTHEAST

A cool start, with below-normal temperatures, is accompanied by below-normal precipitation. The

balance of spring, April and May, looks to be warmer and drier, with above-normal temperatures and near-to below-normal precipitation. This is promising for fieldwork and planting following a very wet pattern during last fall, with significant harvest disruption.

NORTHERN PLAINS

As with the Midwest, a key feature for the region is the temperature trend. Early-spring indications are cool, with below-normal conditions. But, mid to late spring has a warmer trend. Precipitation forecasts are variable: near to above normal in eastern areas and near normal west. This pattern will be important because there is plenty to do just to prepare fields for planting, let alone take care of planting itself.

CENTRAL AND SOUTHERN PLAINS

Central and Southern Plains temperatures have a consistent upward trend: below normal in March; near to above normal in April; and above normal in May. Precipitation prospects are variable during March and April, and generally above normal in May. Indications are that spring fieldwork and planting will have adequate to favorable conditions. Winter wheat in its crop-producing stages will also benefit from this trend.

SOUTHWEST

Spring starts out cool, with below-normal temperatures followed by a more normal to above-normal trend through the balance of the season. Precipitation indications are for near- to above-normal amounts. The trend to near- to above-normal precipitation will be key to improving the streamflow in the Colorado River basin. Implications from the forecast are that there will be some improvement in the basin volume. However, long-term drought is still going to be a feature.

FAR WEST

A mainly cool temperature trend is in store for the Far West during spring 2019. Precipitation also has indications of being near to above normal. El Niño may be fading, but, it still has the potential to affect this region's spring pattern.

NORTHWEST

A notable change in temperatures through the season—below normal in March and April changing to above normal in May—is indicated for the Northwest. Precipitation is variable: near to below normal in March and May, near to above normal in April. Some long-term drought easing is indicated, but, widespread drought ending appears to be unlikely. ///

How early sales earned DTN customers better 2018 profits

In the current environment, you need every opportunity to get the most for your crops. While times are tough, there are tools to help. Read on to learn how Nebraska producer Ron Schernikau profited in 2018 with clear, unbiased insights from DTN Market Strategies.

For years, Ron Schernikau hired other people to do his marketing. That changed in 2018 when the Nebraska-based corn and soybean grower decided to try it on his own with help from DTN.

Before, Schernikau said, by late summer his options bank account would always be out of money and he'd have to add more. After taking charge of his marketing with help from DTN Market Strategies, he said, "We had a pile of money in it. I attribute that to selling our crop in May."

Easy to understand recommendations

Schernikau explained that he didn't know a lot about options or strategies going into it. He credits the advice from DTN Market Strategies and good common sense for his success.

That spring, the DTN service recommended that he sell his grain and he did. "We sold out and went short to market," Schernikau said.

"There is truth through DTN that the common person can use. They're watching the weather for us. They're watching the markets. They're watching what's taking place in the world," he

said. "I get up in the morning and in 10 minutes I can tell you exactly what's going on — it's on DTN. I just use the facts they present."

"We used all of their advice and we're just totally happy with what's taken place," Schernikau said. "It's real simple. Just follow the charts. They'll tell you exactly what's going to happen."

The proof is in the price

Schernikau wasn't the only DTN customer to benefit from the service. DTN Editor-in-Chief Greg Horstmeier confirmed that the company's daily analysis of market factors guided producers to forward price significant amounts of their 2018 corn crop early in the season, for an average net price of about \$4.11 per bushel. "That resulted from net pricing actions ranging from \$4.04 to \$4.17 per bushel," Horstmeier said.

See what it can do for you

Visit www.dtn.com/mydtn to get a FREE trial of DTN Market Strategies. ■

"I get up in the morning and in 10 minutes I can tell you exactly what's going on — it's on DTN. I just use the facts they present."

Ron Schernikau





With help from DTN Market Strategies, Schernikau was able to sell his 2018 crops last May — securing better prices.

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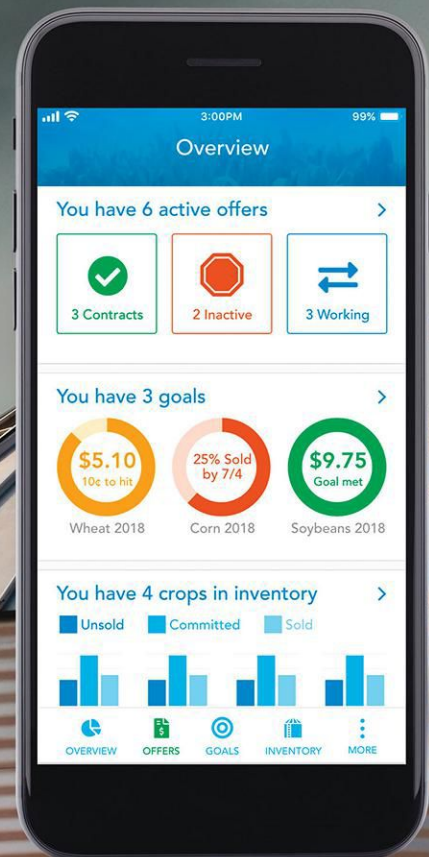
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Hidden Wonders

Sharing the ranch with tourists offers one family additional income and extra appreciation for their land.

Sarah Switzer Sortum always sensed that something about her family's Burwell, Nebraska, ranch would have to change to support more than one generation.

She is the fourth generation on the ranch her great-grandfather established in 1904 and was working in Colorado with her husband, Mark, when the couple recognized their deep desire to move home to Switzer Ranch to raise their family. That desire to go home again also meant they needed another income stream.

The family had already added a business in 2000, Calamus Outfitters. Sortum's parents, Bruce and Sue Ann Switzer, and her brother, Adam, founded the endeavor as a means to support Adam's family on the ranch. Their original vision for a hunting lodge evolved into catering to outdoor enthusiasts and providing a family-oriented destination.

As the business grew, four cabins were added to two lodges. Guest activities include river trips on the Calamus River, bird-watching and Sandhills Ranch Habitat Ecotours.

"I helped with Adam's business for a while, and, it was a nice cushion for our young family. But, it didn't look like it would ever be enough to allow all of us to live and work here," Sortum says.

DANCING CHICKENS

Switzer Ranch is in the heart of Audubon's Greater Gracie Creek Important Bird and Biodiversity Area (IBA), the first privately owned IBA in the state of Nebraska. The area is primarily known for Greater Prairie-Chicken and Sharp-tailed Grouse, but, many other bird species are also found in the area.

When Calamus Outfitters' activities expanded its offerings to include sharp-tailed grouse viewing, Sortum and her family took time to observe the activities of the grouse and the prairie chickens on the ranch. It was time well spent, because it gave them an idea for a new income stream.

"We grew up with the grouse and prairie chickens, and took them for granted," Sortum says. "When we checked cow/calf pairs in spring, we often saw the mating actions of the birds. We never thought other people would be willing to make a special trip here to see it, too." ➤



GETTY IMAGES

The Switzers believe prairie chicken habitat is an important link between agriculture and conservation.

Prairie chicken mating rituals fascinate many Switzer Ranch visitors. Brown and white barred male birds, about the size of a domestic chicken, act out a mating dance, raising feathers on the sides of their necks to expose orange air sacs. The air sacs inflate, creating a booming sound while the birds dance.

“The mating rituals of these birds is such an awesome, fantastic thing that happened right here under our noses,” Sortum says. “Once we took time to watch the birds, we fell in love with them. Now, we recognize that these birds are symbolic of how agriculture and conservation go hand in hand. We support these birds, and, they are supporting us in a very unique way.”

Once found in much of central and eastern North America, prairie chickens are now localized to areas with appropriate habitats, such as native tallgrass prairie, primarily found in the Midwest.

Sortum saw an opportunity to expand the ranch’s bird-watching activities and bring visitors in solely to watch the prairie chickens’ early-spring mating rituals. Calamus Outfitters now offers bird-watching tours from mid-March through April, which Sortum notes is “the best time to see the prairie chicken.” There are also bird-watching tours around migratory waterfowl and bald eagles.

“American white pelicans, Swainson’s hawks and several species of sparrows come through here in April,” Sortum says. “By May, many other bird species are also found here.”

Tours are guided in open-air vehicles or as safari-style groups. Members of the Switzer family head up all the tours, providing historical ranch information and details about ongoing conservation projects implemented on the ranch to support habitat for grassland species.

For prairie chicken tours, buses bring tour members to blinds set up on the birds’ breeding grounds. Morning tours include transportation, guide(s) and breakfast. Tour members who want to stay longer can also reserve lodging and supper on the ranch.



Sarah Switzer Sortum’s family is the fourth generation to call the ranch home. Sharing the beauty of the land with others added essential income streams for the operation.

Once the Switzers refined their prairie chicken observation tours, they looked for more prairie chicken-related activities for visitors. That led to the development of the annual Prairie-Chicken Festival, which includes conservation speakers and authors who share a passion for wildlife.

“We didn’t have any experience in developing an event like this,” Sortum says. “Pricing was difficult for us, because ranchers aren’t used to setting their own prices. It was challenging to determine a price that was fair to both our clientele and to us.”

With the aim to celebrate the Prairie Chicken species, the grasslands they inhabit and the culture surrounding them, Sortum and her family found assistance with Prairie-Chicken Festival plans through the Center for Great Plains Studies. The

Center’s assistant director, Katie Nieland, says the Switzer Ranch is a valuable example of the benefits conservation tourism can provide both landowners and the general public.

“The Switzer family’s goal is to stay on the land they’ve grown to love so much, while they share the beauty of that area with others,” Nieland says. “Sarah and her family

have learned as much as they can about the grasslands and wildlife on their ranch. Their knowledge is what makes it so enjoyable for tourists to visit and learn more about the ranch, too.”

“The Switzer family’s goal is to stay on the land they’ve grown to love so much, while they share the beauty of that area with others.”

—Katie Nieland

EVERYTHING HAS VALUE

In her work, Nieland hears tourists excitedly comment on the beauty of an open-space, open-sky experience, which is difficult to find in highly populated areas. Observing waterfowl migrations also rates high on the list of experiences tourists seek.



“The Switzer family has approached their tourism business step-by-step, starting small and adding experiences as they analyze what visitors and guests are seeking,” says Nieland, who works with the Switzers and a coalition of landowners in the Great Plains region.

“We have a group of university researchers who assist landowners like the Switzers in identifying the

The Sortum family moved from Colorado to the family ranch in Burwell, Nebraska. All four (Emmett, Mark, Sarah and Henry) have worked to help build conservation tourism in the area.



legal aspects of conservation tourism and developing best practices for their business,” Nieland says.

Sortum believes the value of private lands like her family’s ranch will continue to grow during the next 50 years.

“After bird-watchers came for several years, we realized our visitors were interested in both the birds and ranching activities,” Sortum says. “Our clientele are very educated, intelligent people who are genuinely curious and desire to learn about the birds and agriculture.”

Sortum and her family recognize the ranch represents more than just their survival. Preserving the grasslands ecosystem adds value to the ranch and offers future generations a priceless living archive.

“Our family has come to understand that everything on the ranch has value,” Sortum says. “Grass always earned our income through grazing, and, now, we see that even the grasshoppers here play a role in the life cycle by feeding the birds. The role we play in keeping the grassland system healthy and as diverse as possible ensures that future generations will have the same opportunities we have had.” ///

FOR MORE INFORMATION

- Switzer Ranch: www.calamusoutfitters.com
- Nebraska Prairie-Chicken Festival:
www.nebraskaprairiechickens.com
- University of Nebraska Center for Great Plains
Studies: www.unl.edu/plains/welcome



Data Revolution's Human Touch

Turns out algorithms alone can't make complex cropping decisions. It still takes a team approach with trusted advisers.

Chalmers, Indiana, farmer Brandon Bell isn't waiting for that digital ah-ha moment, when with a simple mouse click or two, a computer generates game-changing recommendations that match the complexities of farming.

To get top recommendations now, Bell shares soil and yield data with his local soil-fertility experts through a local agribusiness and energy marketing and supply cooperative. The data forms the basis for his variable-rate fertilizer applications. Sharing crop information allows him to benefit from the data he collects now instead of holding out for the development of an all-knowing algorithm to improve decisions on his 3,200-acre farm.

"Everybody overcollects the data," Bell says. "You tend to sort through what you need and what you don't need. I'd say every person is different. There are definitely guys out there who will spend as much time on data as anything. We're 25% planning and using the information. But, 75% of the time you gotta work and make it happen."

Bell primarily runs John Deere equipment and links to a mobile app on an iPad on his corn and soybean farm, north of West Lafayette. He shares his data with Co-Alliance, which serves as a go-between for the farmer and a fertilizer plant manager. *(Editor's Note: DTN has a business relationship with Co-Alliance.)*

"It has been a big savings," Bell points out. "It allows Co-Alliance to build variable-rate planting maps. As far as the variable rate, we've seen cost savings and yield increase, and, we've seen increases on bigger-yield land."

BROKEN PROMISES

There has been no shortage of companies promising big returns to farmers who collect and supply data on yield, soils, financials and other details. Just put the data in,

Brandon Bell shares data from his operation with Co-Alliance, which then develops variable-rate planting maps.

and, algorithms will spin out the perfect answers, the promise went.

“That turned out to be really, really wrong,” explains Bruce Erickson, agronomy education distance and outreach director at Purdue University.

Along the way, unpredictable real-world challenges arose. Every field is different, and every farm is different in the crop-production challenges it faces, issues an algorithm can’t anticipate, at least at this point in the data evolution.

Sharing data with a local agronomist or seed dealer, and crafting a plan of action on the farm is likely something that will always be needed.

“I wondered if the age of agronomy was over,” Erickson explains, thinking back over the past 15 years. “It seemed to be the business aspect was more important,” and computers would supply the crop-production answers.

Now, agronomists are demanded more than ever.

COMPUTER, HUMAN COOPERATION

In a 2012 TED Talks, Shyam Sankar, director of San Francisco-based Palantir Technologies, said human/computer cooperation would make the use of data more effective (visit www.ted.com/talks/shyam_sankar_the_rise_of_human_computer_cooperation?language=en#t-707842).

“Isn’t supposed to be man versus machine,” he said during the talk. “Instead, it’s about cooperation and the right type of cooperation. So, if you want to improve human-computer symbiosis, what can you do? You can start by designing the human into the process. Instead of thinking about what a computer will do to solve the problem, design the solution around what the human will do, as well.”

Palantir builds intelligent operating systems software for government agencies and commercial industries, with an eye on agriculture.

Ted Mabrey, head of business development at Palantir, says he believes artificial intelligence has the potential to improve decision-making on the farm. Human intuition, however, still will be needed to maximize the collaboration.

“The primary problem with technology is finding a way to manage complex data that can be interpreted by someone who is not a data scientist,” Mabrey explains. “Who can interpret data to take to the farmer and empower them as the decision-maker?”

The data-technology problem yet to be solved, he adds, is meeting farmers where they are. He says it has to start with talking to farmers about the decisions they are making. “Technologies that really work start with operators,” he continues.



NATURE OF THE BUSINESS

Alexander Reichert, chief executive officer and cofounder of AgVend, a digital market for farming inputs, stresses the data revolution hasn’t arrived in agriculture because of the complexities of the business.

“There is so much variability in this industry,” he says. “You can farm two different tracts across the street from each other and get two different results. That makes it very difficult.”

Purdue’s Erickson notes the volume and use of data in agriculture will continue to expand but will not be fully realized until technology catches up to the industry.

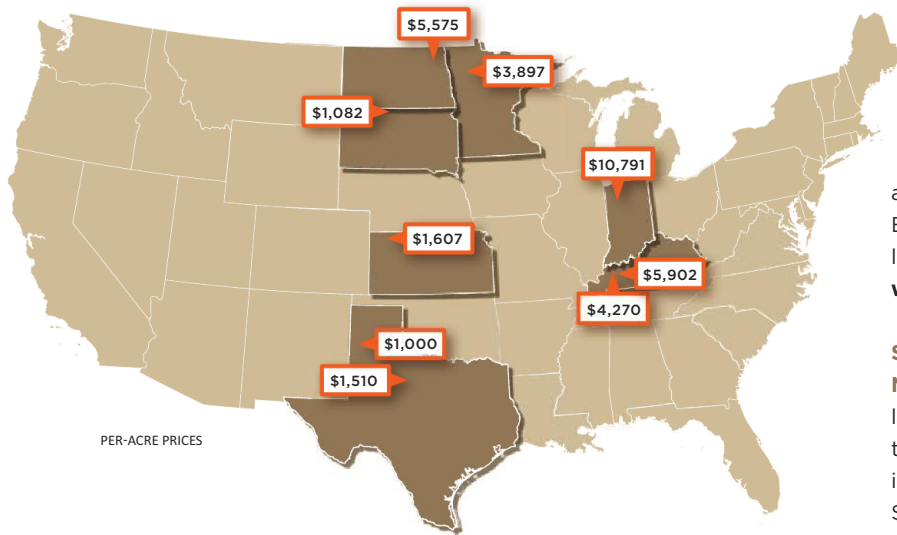
“In science, you can mix chemicals and know what will happen,” Erickson points out. “In a biological system, you are dealing with living things, soil, plants, etc.—complicated and mysterious things. The simple things are more complicated than we thought. Even fields that don’t look complicated are complicated.”

Bell says he’s not opposed to sharing data regionally to better other producers. After all, it’s common in northwest Indiana to produce 240-bushel corn yields, he adds, so, producers really aren’t giving up any secrets.

“As long as it is for the betterment for what we’re doing, I don’t see a problem,” Bell says. “As it happens, things need to be simplified for farmers to be interested. There’s nothing more frustrating than sitting and waiting for maps to download.

“There will always need to be someone involved locally,” Bell continues. “We’re going to have automated tractors, and they will work. But, I’ll not be able to sit on a beach in Mexico while it’s working. Technology and data is great, but, I don’t know that we’re ever going to get away from being physically involved. I still want to be involved.” ///

Recent Farmland Sales



The land was available for the 2019 crop year, with soils suitable for sugar beets, soybeans, corn and small grains. **Contact:** Lindsey Brown, Pifer's Land Auctions; lbrown@pifers.com; 701-371-5538 www.pifers.com

SOUTH DAKOTA, Corson County and NORTH DAKOTA, Sioux County.

A large ranch and cropland property totaling 3,428 total acres and crossing into two states sold at auction for \$3.71 million. The land sold in eight parcels to four buyers. Prices per acre by parcel ranged from a low of \$910 to a high of \$1,575. Average per-acre price across the entire property was about \$1,082. Much of the land, some 2,540 acres, was pasture with about 887 acres in crops. Good water sources and multiple buildings, corrals, a house and mature trees were part of the offering. **Contact:** Alan Butts, alanb@pifers.com, or Kristen Gill, kgill@pifers.com; Pifer's Land Auctions; 877-700-4099 www.pifers.com

TEXAS, Knox County. Property operated as a dryland farm totaling 52.9 acres sold for \$79,879, or \$1,510 per acre. The property included four water wells and barbwire fencing. It sold with the 2018 wheat crop.

Lamb County. Land operated as a dryland farm totaling 163 acres sold for \$163,000, or \$1,000 per acre. The property included three water wells. **Contact for both Texas sales:** Travis Hawkins, Keller Williams Realty; thawkins@kw.com; 325-370-3710 www.kwland.com

INDIANA, Tippecanoe County. A 139-acre property located close to Purdue University sold for \$1.5 million, or \$10,791 per acre. The property included 120 tillable acres and 19 wooded acres. The land sold to a local farm family and will stay in agriculture. **Contact:** Johnny Klemme, Geswein Farm and Land Realty LLC; johnny@edgeswein.com; 765-427-1619 www.edgeswein.com

KANSAS, Decatur County. Cropland and grass totaling 1,400 acres sold at auction for \$2.25 million. The property sold in six tracts, with average per-acre prices ranging from a low of \$950 to a high of \$2,600. The average per-acre price across the entire property was about \$1,607. The farm included base acres in wheat, grain sorghum, corn and sunflowers. **Contact:** Mike Bailey or Grant Bailey, Farm and Ranch Realty Inc.; info@frrmail.com; 800-247-7863 www.farmandranchrealty.com

KENTUCKY, Ohio County. A 61-acre tract with about 55 acres of flat, overflow cropland sold at auction for \$360,000, or about \$5,902 per acre. Soils were silt loam, some with high natural fertility. **Contact:** Bill Kurtz, Kurtz Auction and Realty;

bill@kurtzauction.com; 800-264-1204 www.kurtzauction.com

Webster County. The Bill and Louise Hatley Trust auction sold 274 acres for \$1.17 million. The rolling, hilly land sold in 11 tracts, with an average price of about \$4,270 per acre. **Contact:** Amy Whistle, Kurtz Auction and Realty; amy@kurtzauction.com; 800-264-1204 www.kurtzauction.com

MINNESOTA, Norman County. High-quality cropland totaling 467 acres sold at auction for \$1.82 million. The property sold in four parcels. Average per-acre parcel prices ranged from \$3,325 to \$4,500. Average per-acre price across the entire property was \$3,897. This land had a Soil Productivity Index that ranged from 88 to 91.3. It produces high-yielding sugar beets, corn and soybeans. The farm held a 2019 and 2020 lease at a rate of \$204.51 per cropland acre. **Contact:** Steve Dalen, Pifer's Land Auctions; sdalen@pifers.com; 701-893-8517 www.pifers.com

NORTH DAKOTA, Pembina County. Red River Valley cropland totaling 110.5 acres sold at auction for \$616,037, or about \$5,575 per acre.

Submit recent land sales to landwatch@dtm.com.

Find current listings at about.dtnpf.com/landwatch.



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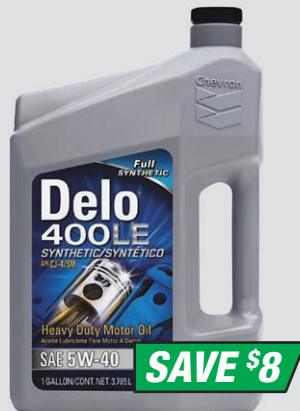
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The QUEST For QUALITY

National Wheat Yield Contest looks beyond bushels for improved milling characteristics.

Phillip Gross knows the perils of growing too much wheat.

“In the past, there have been varieties that yielded super high in the Pacific Northwest, but, as a result, the milling quality wasn’t that great, and, some of it just wasn’t palatable,” the Warden, Washington, grower recalls.

With a glut of domestic wheat supplies at play, the stakes are too high for wheat growers to make that mistake, he says. “We don’t want to flood the market with cheap feed wheat and lose our edge in the export market.”

That’s why Gross was thrilled when the National Wheat Yield Contest—where he has won top yield for three straight years—added a quality component to the competition in 2018.

And, it’s why he was relieved that his bin-busting entry, which topped out at 202.53 bushels per acre (bpa), received high marks for quality components like grade, test weight, falling number, hardness and 1,000-kernel weight.

“Some people are concerned that if you drive yield, you will do it at the sacrifice of quality,” says Steve Joehl, director of research and technology at the National Association of Wheat Growers (NAWG).

As director of the contest, Joehl is also the man who sorted through the 163 wheat entries submitted this year, sent them off for lab analysis and scrutinized the results. His up-close look at the bounty of America’s top wheat producers was heartening, he says.

Of the 163 wheat entries analyzed, only 11 didn’t make Grade 1 or 2, the cutoff for food-grade wheat and to qualify for the contest. Milling quality was high, and, protein levels held strong among even the highest-yielding samples.

“What we’re seeing from these test results is we had really good production of high-quality wheat, and, if I were a miller, I’d be camping out next to every one of these winners asking to buy their wheat,” Joehl says.

WHY QUALITY MATTERS

The hard truth is American wheat simply doesn’t get exported at the same rates as competitors like Canada, the EU, Russia and Ukraine, notes Todd Hultman, DTN lead analyst.

Some blame lies with the strength of the dollar, which makes American wheat more expensive compared to Canada and the EU. But, geography also plays a role—it’s hard to compete for major wheat importers in North Africa and southeast Asia, when Russia and Ukraine loom so much closer, Hultman notes. ➤

25
STATES
REPRESENTED
IN THE CONTEST



Currency and geography may be beyond farmers' influence, but, they can control what they grow, Joehl says. "If we're going to compete in a world market, we've got to compete on consistent quality," he says.

Focusing on improving and fine-tuning wheat quality for the domestic market is also key, says DTN cash grains analyst Mary Kennedy. "Flour mills are precise in what grade factors and protein they need out of both spring wheat and winter wheat to make flour," she explains. "It is an intricate process, and, every factor matters for the end result in baking bread or making noodles."

Mill buyers scrutinize components such as protein, moisture content, pesticide residue, mycotoxins, percent flour extraction, test weight, kernel size and other baking indicators such as falling number, hardness and 1,000-kernel weight, Kennedy notes. (See "The Scoop on Wheat Quality," on page 28, for more details on what each component means.)

The wheat contest tested wheat entries for many of these components this year and will continue to do so in future contests, Joehl says.

"What's unique about this contest is farmers have to put down every little management practice—planting date, fertility, variety and more," he explains. "So, every sample we have and its quality

results, is correlated to those management practices."

In just a few years, the contest should be able to use that aggregated data to make interesting conclusions on how each management practice affects crucial milling and baking characteristics like protein and falling number, Joehl says.

"That's a lot of data power," he continues.

Those results will be a welcome source of information both to contestants and the larger wheat industry, Gross adds.

"I hope it will really encourage growers to focus more on quality and not just yield by itself," he says. "Wheat acres are really dwindling, and, in order to keep the markets we do have, we need to make sure that our buyers know that they're getting a premium quality."

HOW QUALITY HAPPENS

Wheat can sometimes get short shrift when it comes to crop management. The wheat yield contest was designed to show how the crop can shine when farmers take time to scout and apply fertilizer, nutrients, fungicides and insecticides at just the right time.

Even after supplementing his winter wheat with nitrogen, phosphorus, potassium and sulfur based on carefully timed tissue and soil tests, Gross was astonished at the kernels from his winning winter wheat field.

"The kernel size was just huge—they were humongous and heavy," he says. "You could take two or three small or semifilled kernels, and fit them in the same area as these big, plump ones. That was a pleasant surprise."

Like Gross, the contest's other national yield winners are devoted to their wheat fields. If you go looking for a member of the Horton family in southwest Kansas in the spring or summer, you'll probably catch at least one of them in a wheat field. Horton Seed Services' 111.28-bpa irrigated winter wheat field won in its category, placing a whopping 312% above the county average.

When they aren't pulling tissue samples to track and maintain nutrient levels, they're counting tillers, kernels per head and plants per row-foot—and analyzing the impact of inputs with yearly field experiments. "We're out scouting every Monday or Tuesday," Alec Horton says.

Likewise, Larry Carroll pulls biweekly petiole tissue samples from his northern Oregon spring wheat fields, one of which topped the irrigated spring wheat category at 158.93 bpa, 413% above the county average. He tests each sample and adds any nutrients or micronutrients as needed through his sprayer all season long.

"When that crop asks for something, be prepared," he says. "It's going to talk to you; you just have to listen." ➤

318

INITIAL WHEAT
CONTEST
ENTRIES

New Ranking Rules in 2019

This spring, the wheat yield contest will have a new ranking system designed to reflect the acreage and accomplishments of U.S. wheat growers more accurately.

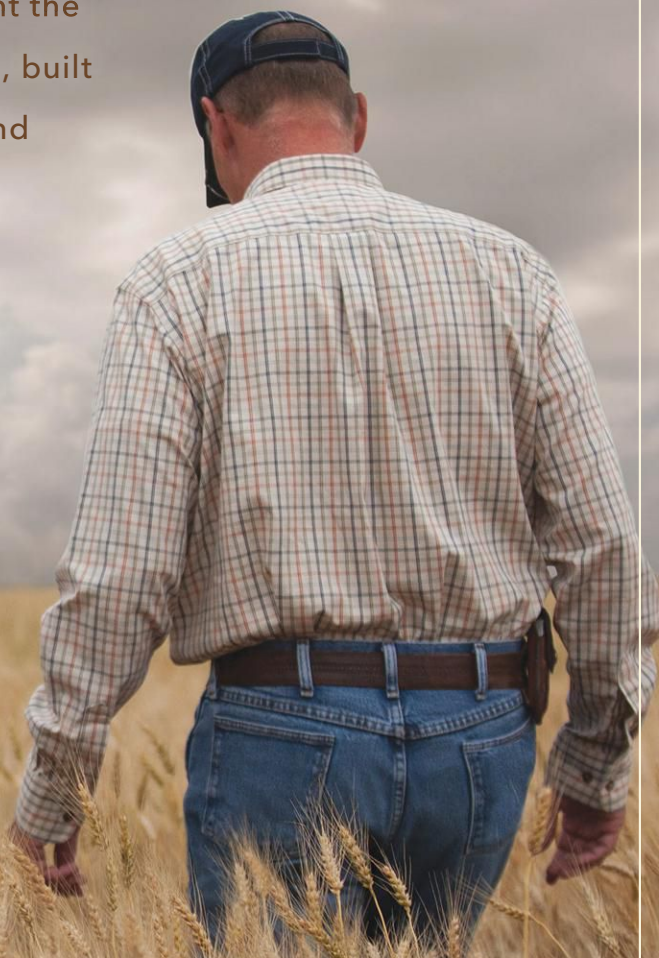
In the past, basing the national winner rankings on the percentage growers yield above their county average has given growers from lower-yielding regions a chance to shine. But, it has also discouraged growers from higher-yielding regions and produced some peculiar rankings. For example, in 2018, two growers who nearly matched the contest's highest yield of 202.53 bpa (bushels per acre) only ranked third in their categories, because their percentage above the county average wasn't as high.

For 2019, each category of wheat will have two tiers of winners. One set will be based on raw yield alone. The other will continue to reward growers for percentages above the county average. Each tier will have a different number of winners, too, to reflect actual wheat acreage in the U.S. For example, dryland winter wheat, which accounted for 56% of the 2018 entries, will award first through fifth place in 2019. But, irrigated spring wheat, which only accounted for 5% of the 2018 entries, will only have a single first-place award in 2019.

To see the new ranking system, visit bit.ly/1VVOZLZ.

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THE SCOOP ON WHEAT QUALITY



JIM PATRICO

The wheat contest analyzed wheat entries for seven different quality components.

➤ **Wheat Grade:** Grades 1 to 5. To assign grades to wheat samples, the Federal Grain Inspection Service considers test weight, damaged and broken kernels, foreign material and the presence of other types of wheat. Food-grade wheat must be Grade 1 or 2—which also served as the cutoff for the contest. Grades 3 to 5 usually end up as feed.

➤ **Test Weight:** A wheat sample's density in pounds per bushel. Most types of wheat must weigh 58 pounds per bushel or more to make Grade 2 and 60 pounds per bushel for Grade 1. However, hard red spring and white club wheat need only reach 57 pounds per bushel to qualify as Grade 2 and 58 pounds per bushel to reach Grade 1.

➤ **Protein:** The percentage of a kernel made of protein by weight. Protein levels are extremely important to grain millers, who generally prefer 12% protein flour. Higher protein content produces more crusty or chewy consistency, desired in pasta and many breads. Lower protein content produces softer flour, better suited for cakes, cookies and pie crusts.

➤ **Moisture:** The percentage of a kernel made of water by weight. Grain moisture will affect both storage life span and the milling process.

➤ **1,000-Kernel Weight:** The weight in grams of 1,000 kernels. Shrunken kernels that weigh below 30 grams will yield less flour for millers.

➤ **Falling Number:** A measurement of grain's starch quality, which affects the quality of the flour. Falling numbers above 300 show good starch quality.

➤ **DON:** Short for deoxynivalenol, often called vomitoxin. DON is a dangerous mycotoxin produced by Fusarium head blight of wheat, often called head scab. The FDA limits DON content in wheat to 1 part per million (ppm) for human consumption and 5 to 10 ppm for livestock, depending on the type.



JIM PATRICO

HIGH YIELD WINNER

Phillip Gross

Warden Hutterian Brethren
Warden, Washington

Variety: LCS Jet from Limagrain

at 740,000 seeds/acre

Yield: 202.53 bpa, 73% above the five-year county average

MEET THE FARMERS: Phillip Gross farms with the Warden Hutterian Brethren in central Washington, a large family farm that encompasses roughly 25,000 acres. The farm produces a wide range of dryland and irrigated crops, including potatoes, corn, mint—and wheat. “Wheat is a large part of the farm, where it is an important rotation crop,” Gross explains.

INPUT INSIGHTS: Gross' contest field got a total nitrogen load of 318 pounds split between the fall, early spring and preflag leaf. He also added phosphate, potassium and sulfur, and 17 acre-inches of irrigation water. Annual scouting and testing have taught him to keep his nitrogen to sulfur ratio close to 10-to-1, Gross says. An infestation of cereal leaf beetle required an insecticide pass, and, the field received two routine fungicide applications to prevent disease. He also used seed treatments and is running experiments this year to evaluate plant growth regulators used in combination with insecticide and fungicide on his wheat seed.

BIGGEST CHALLENGE: “The majority of our wheat, about 70% of it, is in a limited water situation,” Gross explains. He pulls from the Odessa aquifers, which are declining, so, his water usage is carefully regulated by the state.

WINNING TIP: “Many people try to find silver bullets, and, there aren't any,” Gross cautions. But, if he has to pick one, it's staying ahead of plant health. “Once a disease or pest sets in, and, you have to fix the situation, you have already lost yield, and, you are not getting it back,” he says. “That's why we're constantly walking fields.” ➤



2018 National Wheat Yield Contest winner is a hands-on wheat grower.



“Probably one of the most important things you can do is to actually walk your fields. You can’t manage your crop from inside your pickup.”

*Phillip Gross
2018 National Wheat Yield Contest winner
Adams County, Washington*

Growing wheat successfully is a mix of many things: experience and improvisation, agronomics and management practices, seed genetics and the right inputs. And, according to 2018 National Wheat Yield Contest winner Phillip Gross, keeping your crop happy.

“Try to create excellent conditions for your crop to grow and flourish. Don’t be afraid to spend money on your crop — invest in it,” said Gross, of Warden Hutterian Brethren Farm in the Columbia Basin of Washington state. “Feed your crop the nutrients it needs when it needs it. Protect your crop from diseases and insects with the best products possible before problems develop.”



Flag leaf stage is crucial for grain fill.

Gross has found that Nexicor™ Xemium® brand fungicide from BASF has helped with disease management in his wheat crop. “We’ve been very pleased with the results we’ve seen in the field,” he said. “We’re getting superior disease management, excellent disease prevention and control against aggressive fungal pathogens plus long-lasting control. Our canopies look lush and green

after a Nexicor fungicide application.” While Gross appreciates the application flexibility he gets, Nexicor fungicide is especially important to apply at flag leaf stage, which produces up to 70 percent of photosynthate for grain fill, helping a grower maximize yield potential.

As a three-time National Wheat Yield Contest winner, Gross emphasizes the importance of being proactive. “Once a crop goes into a deficit situation, whether it’s nutrition or water, it’s too late, you can’t catch up. Timing is critical for fertility, water and disease management. It’s hard to do but crucial to maximizing yield and quality.”

As for what keeps him coming back each year to enter the contest, that’s easy. “We enter to win, of course,” he laughed. “Seriously though, we enter to see how good a crop we can grow. We improvise when we must, but sometimes we stumble upon solutions and techniques that carry us across the finish line. Trying to improve each year is a personal challenge.”

Visit **GrowSmartWheat.com** for more information on how Nexicor fungicide can reward your wheat crop.



JOEL REICHENBERGER

DRYLAND WINTER WHEAT CATEGORY

Travis Freeburg

R&K Farms

Pine Bluffs, Wyoming

Variety: SY Monument from AgriPro at 1 to 1.2 million seeds/acre

Yield: 124.46 bpa, 398% above the five-year county average

MEET THE FARMERS: With his father, Ray, Travis Freeburg helps manage R&K Farms, a farming operation that straddles two states, southeast Wyoming and western Nebraska. They grow corn, soybeans, alfalfa and wheat, in addition to running a 1,000-head cow/calf operation.

INPUT INSIGHTS: Although R&K Farms does run pivots, it was the no-till dryland wheat that shone this year, thanks to plentiful rainfall and ideal growing conditions. They took advantage of the unusually high rainfall and doubled their wheat nitrogen applications this year, Freeburg says. The winning field got 130 pounds of N, along with phosphate and micronutrients, and 25 inches of rainfall—10 inches above normal. The field was also sprayed twice with fungicide to control stripe rust, once early in the season and then again at flag leaf. Freeburg credits the crop consultants he works with at Frenchman Valley Coop with helping interpret and use the many soil- and tissue-sampling tests run throughout the growing season.

BIGGEST CHALLENGE: “We live in a really terrible hail alley,” Freeburg says. “Storms come over the Rockies and mix with air from the east, and, we get some nasty supercells. Typically, we don’t go a year without losing a percentage of our crop to hail.”

WINNING TIP: “I think the fungicides are, dollar for dollar, our best return on investment,” Freeburg says. “It’s all about keeping that plant as healthy as possible to get its full yield potential.”

248
DRYLAND
WHEAT ENTRIES

(SPRING &
WINTER)



TOM STROMME

DRYLAND SPRING WHEAT CATEGORY

Jon Wert

Wert Farms

New England, North Dakota

Variety: LCS Trigger from

Limagrain at 1.5 million seeds/acre

Yield: 103.98-bpa field, 126%

above the five-year county average

MEET THE FARMERS: Jon Wert

is the fifth generation farming Wert

Farms, which has been a trailblazer in southwestern

North Dakota. “I took over from my father and uncle, who started no-till in 1981,” Wert explains. “Now, our county has pretty much turned into a no-till haven.”

Wert grows spring wheat, canola and corn.

INPUT INSIGHTS: Wert’s winning field got off to a bad start after it was planted a month later than preferred, in early May. Fortunately, June delivered 6.5 inches of rainfall, which carried the field through a dry July and August. Wert walked his fields all summer long looking for problems and pulling tissue samples. Annual soil testing let him know he only needed to add 85 pounds of nitrogen at planting to his winning field, along with phosphorus and potassium. He also added a third fungicide pass to keep head scab at bay.

BIGGEST CHALLENGE: Not only does Wert face a naturally limited annual rainfall, but, he has fought to end a state cloud-seeding program started in western North Dakota in the 1950s. The program aims to reduce damaging hail, but, many local farmers believe it has reduced annual rainfall amounts in the region.

WINNING TIP: Wert credits his farm’s four-decade devotion to no-till with easing the effects of drought and limited rainfall. His winning field boasted 4.7% organic matter compared to the 2% Wert finds on conventionally tilled ground in his region. “No-till absolutely helps hold moisture in the ground,” he says. “We were worried after our contest field didn’t receive any rainfall after July 2, but, there was enough moisture held in the ground to finish it off.” ➤

50+

ENTRIES FROM
NORTH DAKOTA
AND KANSAS



Take Action to Fight Profit-Reducing Scab

Each year wheat growers across the northern Plains contend with the harsh reality that the effect of scab on yield and grain quality costs them millions in profits.

That was a lesson Lee Lubbers learned years ago. In 1999, he was the first wheat grower with a verified case of widespread Fusarium head blight (FHB), or scab. Researchers found six scab-contaminated areas on his southern South Dakota farm.

Identifying a disease like scab in his crop was troubling enough, but Lubbers saw its true devastating effects on his winter wheat crop at harvest. Scab led to elevated deoxynivalenol (DON) levels, low grain fill and yield loss. Instead of yields in the 90-100 bu/A range like his other wheat crops, he averaged only 30-35 bushels on his impacted acres, and he received a sizable discount at the elevator for high DON levels caused by scab.

Ohio State University research has indicated a field with just 10-15 percent scab contamination can lead to a loss of 50 percent or more. Discounts from Midwest grain elevators for vomitoxin levels between 6-10 ppm can range from 40 cents to \$2 an acre. With that much to lose, taking a hope-and-miss approach to scab isn't the safest route.

It wasn't a risk Lubbers was willing to take again. So, he sought out a solution from the Bayer Cereal Experts. They recommended a proactive fungicide application of Prosaro® to control scab and suppress mycotoxins. In addition

to scab, Prosaro also delivers unsurpassed control of foliar diseases like tan spot, septoria and leaf, stem and strip rusts.

With Prosaro, Lubbers got the scab protection he was looking for to improve grain quality and maximize yield. "Since we first started using Prosaro, we have never been rejected on a load," he said. "We never get a discount. We actually get a premium for our wheat."

Application timing has been critical in Lubbers' success controlling scab. "We use Prosaro at early flower and at bloom on the wheat for Fusarium head blight," he said.

According to the Cereal Experts, the optimum time to apply Prosaro is at the early flowering stage. The recommended rate of 8.2 oz/A gives growers a wider application window and long residual for greater flexibility in timing whether at earlier stages or later due to weather or other delays.

While researchers work diligently to introduce varieties with strong scab resistance and high yields, scab continues to cost wheat growers millions each year. Lubbers hopes his experience can help growers who don't want to face another year of yield loss and dockage because of scab.

"If we did not use Prosaro, we would not be able to raise wheat anymore. We would just have a flop for a crop," Lubbers explained. "Ultimately, we would be lost without Prosaro. It has saved the day for us."

4 Ways to Keep Scab at Bay

- 1. Variety Selection:** Wheat producers should consider varietal options that provide moderate-to-intermediate resistance to Fusarium head blight (FHB). Choose varieties with competitive levels of key agronomic traits, including grain yield, test weight and straw strength, along with essential quality traits such as protein content.
- 2. Heat & Humidity:** FHB favors moderate temperatures of 56-86° F and a high relative humidity exceeding 90 percent, so keep a close watch on the forecast. However, scab can still crop up in your wheat, even under ideal weather conditions.
- 3. Online Assessment:** When wheat is at the early flowering stage, check the national Fusarium prediction model for a local, daily risk assessment of scab. The model is about 75 percent accurate, so consider field history and consult a local crop specialist to confirm.
- 4. Apply a Fungicide:** To fight Fusarium, apply Prosaro® fungicide at the recommended rate of 8.2 oz/A. With flexibility across developmental stages, early flowering is the optimal stage for Prosaro application. Depending on air temperature, this timeframe is usually 1-2 days before anthers become visible on the main stem heads until 5 or 6 days after anthers appear on the middle florets of the heads.



LARRY REICHENBERGER

IRRIGATED WINTER WHEAT CATEGORY The Horton Family

Horton Seed Services

Leoti, Kansas

Variety: WB-Cedar from WestBred at 720,000 seeds/acre

Yield: 111.28-bpa field, 312% above the five-year county average

MEET THE FARMERS: The Hortons are building a wheat dynasty in western Kansas. Ken Horton farms with his three sons, Rick, Matt and Alec, and their wives and families. They grow wheat, corn and sorghum, interspersed with fallow periods, in addition to their seed cleaning, treating and sales business. “All of us take part in everything we do to these fields,” Alec Horton says.

INPUT INSIGHTS: The Hortons treated their wheat seed with insecticide and fungicide. The winning field had a summer application of conditioned manure and “fertigation” applications of sulfur and nitrogen, once in the fall and a couple of times in the spring, for a total of 150 pounds of N. Every week, the Hortons scouted and pulled tissue samples, and made sure nitrogen and other nutrient levels were maintained. They’ve found that a 7-to-1 ratio of nitrogen to sulfur builds quality protein and best captures yield potential on their land, Horton says. They also ran two passes of fungicide to control rust diseases and added nine acre-inches of irrigation water.

BIGGEST CHALLENGE: The Hortons combat limited rainfall with carefully calibrated seeding rates. They seed well below industry averages—375,000 to 500,000 seeds/acre on their dryland acres. “It makes for more tillers, a more efficient plant, not as much competition, and, you’re not wasting a bunch of moisture up front in fall, so, you can get longer into spring before the plants need a drink,” Horton says.

WINNING TIP: “The brunt of it would be the fertigation and the seed treatments we put on,” Horton says. “All the wheat we grow is treated with the max rate of insecticide, and, we treat the majority of the seed we sell, too.”



WALTERS PHOTOGRAPHY

IRRIGATED SPRING WHEAT CATEGORY

Larry Carroll

Holzapfel Ranch

Hermiston, Oregon

Variety: Espresso from WestBred at 2 million seeds/acre

Yield: 158.93-bpa field, 413% above the five-year county average

MEET THE FARMERS:

Larry Carroll, his son and father work 1,800 irrigated acres in north-central Oregon, just across the border from Washington. The three generations of farmers grow corn, wheat, alfalfa and grass seed, using minimum till and irrigation water from the underground Odessa aquifers.

INPUT INSIGHTS: Contrary to its name, Carroll planted his spring wheat in the fall, a benefit of Oregon’s usually mild winters. He disked in 5,000 gallons of green cow manure before planting then applied another 100 pounds of nitrogen in the spring. Every two weeks, he pulled petioles, ran tissue tests and applied micronutrients through his sprayer, as needed. He gave the award-winning field one fungicide pass to ward off powdery mildew and supplemented the field’s scarce rainfall with 24 acre-inches of irrigation.

BIGGEST CHALLENGE: Keeping water and nutrients available in Carroll’s sandy soils takes a lot of attention and care. “It’s easy to overwater,” he says. “Manure takes two years to break down, so, we want to keep it down there, delivering nitrogen all the time—there’s no reason to push it out of the root zone.”

WINNING TIP:

“I’d say attention to detail,” Carroll says. He often supplements the crop in-season with micronutrients like copper, boron or magnesium—all based on his biweekly tissue tests. He also scouts diligently to make sure his irrigation water is timed just right. “Water usage at flowering time will make or break a wheat kernel,” he says. ///

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Deworming Doesn't Solve Every Problem

We have a small group of calves we weaned about two months ago. They've been wormed and vaccinated, and are on hay and a little feed. One is losing weight and has diarrhea. The rest seem fine. What do I need to do?

DR. McMILLAN: If you have a veterinarian who is familiar with your operation, give him or her a call, and discuss this with them. If you do not have a veterinarian who knows you and your operation, I would suggest calling one and getting him or her to come out a look over your cattle and your operation.

Lately, I have had several similar cases where owners bring in a stool sample, and, when we check it, the calves are heavily infected with worms or worms and coccidia. This is a simple and economical test that is tremendously underutilized.

There are many reasons calves that have been dewormed can still have worms. A calf can be missed. Also, we see more resistance to some dewormers—especially some of the generic pour-ons. Many times, when calves are weaned, they are turned into the same lot calves used in the recent past, and the environment is heavily contaminated with parasite eggs and oocytes. These areas often get muddy, and feedbunks, troughs or pans become contaminated with mud and manure. So, clean pastures or lots, and improved sanitation helps prevent reinfections. Nutrition is also very important. As I have noted before, calves must have a ration that meets their energy, protein and mineral needs. Healthy cattle are much more resistant to all diseases.

Another disease that should be considered is persistent infection with bovine virus diarrhea (BVD-PI). Calves are infected during pregnancy and accept the virus as “normal.” Many of these calves can be smaller and sickly, but some appear normal. All BVD-PI calves shed massive numbers of viruses continuously, so they are a threat to other calves in the herd. This condition can be controlled with testing and vaccinations.

Get a veterinarian involved to know for sure what the problem is. Find out what is happening in your herd, then develop an ongoing herd-health program to keep your operation and your animals healthy and profitable.



Write Dr. Ken McMillan at Ask The Vet, 2204 Lakeshore Dr., Suite 415, Birmingham, AL 35209, or email vet@progressivefarmer.com.

Our children were home visiting recently, and they said our house dog is way too fat. We do leave food out for her, but she doesn't seem to eat that much. Could she have something wrong with her?

DR. McMILLAN: Overweight pets are an increasing problem in this country. This was a rarity with hunting and working dogs in the days past, but, our inside dogs and cats live a pretty cushy life.

Before I start looking for diseases that can lead to weight gain, I discuss with my clients four areas that need to be addressed if their pets are overweight. These work for humans, too, if I would only follow my own advice.

► **1. Feed the right thing.** There are many good dog foods out there, and the most expensive and heaviest advertised may not be the best. We recommend a high-quality, commercial dry dog food tested in an AAFCO-approved (Association of American Feed Control Officials) feeding trial. Light food or diet foods like Hills Metabolic can help some pets.

► **2. Feed the right amount of the right thing.** Each bag or can should have the recommended amount to feed based on what your animal should weigh. While this is only a guide, it is a good starting point.

► **3. Don't feed the wrong things.** Snacks, treats and people food are often high in caloric content and short on nutrition. This doesn't mean you can't occasionally spoil your pet, but, all calories must be counted. So, think about the snacks and treats you choose.

► **4. Get plenty of exercise.** There is an old saying that fits: “If your dog is too fat, you're not getting enough exercise.”

Now, if you do all these things, and your pet does not lose weight, your veterinarian needs to see him or her, and may need to do some lab work.

Hypothyroidism and Cushing's diseases are two common illnesses in dogs that can lead to weight gain. But, before you go down that road, try the free stuff first.



GETTY IMAGES

Please contact your veterinarian for questions pertaining to the health of your herd. Every operation is unique, and the information in this column does not pertain to all situations. This is not intended as medical advice but is purely for informational purposes.

Grow More Lint With Less Water

Texas cotton grower uses emerging technology to boost yields with limited water supplies.



Ever since Lloyd

Arthur and his family decided to downsize their farm to mainly irrigated acres in 2007, the history of their operation has been a study in a drive for better water efficiency. Over the years, the effort has paid off, not only in reduced water consumption but also in significantly better cotton yields.

“My dad would be astounded,” Arthur explains. “I have less water, and, I’m making twice the yields he did.”

PRODUCTIVITY AND TECHNOLOGY

Farming with his brother and son as Arthur Farms and ULL Farms, Arthur says the 2,000-acre operation near Ralls, Texas, is about a third of its size in the

early 2000s. But, the operation is producing more cotton with irrigation wells producing at only about 3 gallons per minute per acre flow.

Technology has played a big part in productivity. “Before we cut back, we had three to four employees.

Today, we have only one,” he says.

ULL Farms is moving away from

furrow irrigation, a practice common in Crosby County long after corn producers further north in the Texas Panhandle had dotted the map with sprinkler systems.

Today, the farms operate 10 LEPA-equipped (low-energy precision application) center-pivot sprinklers and seven drip-irrigation systems. Overall, the pivot-to-drip ratio is about 80/20 on the farm, with drip systems ranging in size from 35 to 70 acres in fields where it’s difficult to operate a sprinkler.

The farm operates five quarter-mile center pivots on 160-foot spans, a half-mile on a partial circle and four six-tower pivots that operate up against a four-lane highway.

“We began installing drip acres about the time we downsized and spaced them on 80-inch centers [between every other furrow], which matched the drop spacing on our center-pivot sprinklers,” he says. The last drip system was installed in 2014, buried directly beneath their 40-inch rows. It was an investment that helps Arthur ensure the plants have sufficient water when it needs water more efficiently.

In addition, the Arthurs are moving toward similar water-efficiency boosts with 40-inch spacing on the sprinkler systems. “This past year, we used USDA EQIP [Environmental Quality Incentives Program] funds to replace an aging center pivot and installed the drops on

it at 40 inches,” Arthur explains. “Irrigation analysts recommended doing this to put water on both sides of the crop to allow water to infiltrate more quickly with less evaporation.

“We’re comparing that pivot with another one nearby, which still has 80-inch drops watering between every other row. Despite hail damage on the field with the new pivot, I like what I’ve seen. We had taller plants than usual and no rutting, even on sloped ground,” he continues. “Even with the hail, I’m convinced we’ll see 30 to 40 pounds more lint under the 40-inch drops compared with the traditional sprinkler.”

COVER CROPS AND MONITORS

The Arthurs’ move to narrower row spacing of irrigation equipment goes hand in hand with the farm’s increasing use of erosion-

Adopting 40-inch spacing with LEPA drops dramatically improves Lloyd Arthur’s irrigation applications and generates additional pounds of lint on his 2,000-acre cotton farm, near Ralls, Texas.



controlling, small-grain winter cover crops. Research shows narrower sprinkler drops applying water through crop residue and growing covers significantly increases application efficiency. In many applications across the High Plains, cash grain irrigators are using 30-inch spacing.

“We can’t use covers on all of our farm, but, where we can, we see much better water infiltration and important reductions in wind erosion throughout the winter,” Arthur explains.

One of the best boosts in irrigation water efficiency and one of the biggest surprises to Arthur was the addition of soil moisture monitors in the sandy loam High Plains soils at ULL Farms.

Over the years, he has used John Deere, AquaSpy and CropMetrics monitors, all of which, he says, do the job and work very similarly; but, he’s currently partial to the CropMetrics system’s ability to report to his cell phone.

“You just dig a hole and install the monitor in the field, and, it uses a phone relay to your computer server, so, you can see in real time the moisture conditions beneath your crop—in the office or on your phone,” he says.

Arthur first used monitors about seven years ago, and, he says the result was eye-opening. “Normally, we had our pivots circling about once every three days. But, once we started monitoring the actual moisture in the profile, we figured out quickly we weren’t pushing that water into the root zone—and, we were still losing a lot of applied water to evaporation,” he says. “It took me visually seeing the monitor results to realize I needed to slow down the sprinklers to get the water deep enough to maintain the plant and protect the water from evaporation. The result was less evaporation and increased yields.”

Arthur says his pivots now run five to seven days making a circle, and, because of better water infiltration at slower sprinkler speeds, the crop doesn’t suffer even on windy, hot July and August afternoons.

“Surprisingly, we found the same technique holds true for our drip acres,” he says. “Before, each total field was getting a small drink every 36 hours, as I thought I had to do that to keep the plants from stressing. What the monitors showed us was even watering like we do now with drip, we stay in each zone of the field no fewer than 24 hours, and, even on hot days, the plants don’t get behind because we’ve supplied sufficient water to the root zone.”

CONSISTENT RESULTS

In a cooperative study with the Texas Alliance for Water Conservation (TAWC), Arthur says one of his drip fields that had consistently produced two-bale cotton yielded three bales.



PHOTO PROVIDED BY LLOYD ARTHUR

“On the rest of the farm, I’d estimate we’re getting 50 to 75 pounds of lint extra per acre because of slower, longer water-application rates,” he explains.

“It just took putting something underground to see what was going on.”

Labor productivity rose when the Arthurs installed Lindsay’s FieldNET on the majority of their center-pivot rigs to control positioning and irrigation rate plus monitor the operation of their sprinklers via a computer or smartphone.

“The system has shortened our downtime on malfunctioning pivots from three to six hours to 15 to 30 minutes,” Arthur says. “It gives us more time to do other things.”

“Before, we’d drive around to check the pivots, and, maybe one would go down 15 minutes after we checked it, and, it would sit there for hours before we knew there was a problem,” he explains. “Now, we know which machine needs attention and go to it first, so, we can get water flowing to the crop again so we can stay on schedule.”

“With FieldNET, we can monitor the systems 24/7, and, if a machine stops or a well goes dead, we can go see what’s wrong in a timely manner; and, in late July, that can make a big difference to cotton farmers.”

Arthur says the wireless system has also helped boost water efficiency, because it enables variable-rate application through pivot speed control. “We can speed up the sprinklers when we are in areas of the field where water saturates quickly, then, we can slow it down where we know the water will infiltrate better,” he explains.

Arthur looks forward to results he sees from variable-rate fertigation.

“By spoon-feeding the crop throughout the year with the irrigation systems, we’ve cut back on fertilizer costs,” he says. The Arthurs collect annual and biannual 24-inch soil samples to keep abreast of the crop’s nutrient needs. Based on crop performance and weather conditions, they use fertigation to meet those needs.

“Right now, we can turn the fertilizer pumps on and off remotely, but, we’re eager to try operating those pumps at varying flow rates for the 2019 crop.” ///

The Arthurs say Lindsay’s FieldNET allows them to service malfunctions in minutes, not the hours it takes when visiting each machine is required.

Send It Home

The rear work light on my tractor's fender is driving me crazy. It makes no sense why it won't burn. I thought it was the bulb, because when I stuck the hot wire going to the light, the test light would burn, but, the bulb would not burn. To my surprise, the new bulb did not make the light work. In all my wisdom, I removed the bulb and stuck the test light in the middle terminal of the pigtail—the test light came on. I put the bulb back in—the light still would not work. But, when I stuck the other wire leaving the light after the bulb, the test light would burn, but, the light bulb would not burn. How can this be? I then removed the complete light and stuck the wires on a battery. The light burned. I'm stumped, confused and glad to have a day job. I reinstalled the light on the fender, and, the light still won't burn. Please tell me I'm not losing my mind. Both sides of the light bulb will burn, the bulb is new, the pigtail has voltage and will light the bulb, but, the bulb won't burn.



STEVE: Your mind is OK. You've just never heard Pappy Thompson's sermon on the fact that electricity will not leave unless it can come home. When you stuck the hot wire with the test light, you saw that the available voltage at the load was there. Next, you changed the bulb, which eliminated that possible problem. Then, you stuck the inside center of the pigtail terminal, and, voltage was there. But, you failed to realize that what you were doing with the test light was forming a ground with the clip, allowing the current to flow back home to the battery through your test light. Then, you stuck the ground side of the light; you had voltage there because the bulb was not using the voltage. In a DC circuit, the little bulb (or any load) will use all available voltage. So, since the bulb was not using any voltage, you did not use (drop) any voltage, so, the voltage was still there looking for a ground, and, your test light completed the circuit. You have a bad ground. Follow the ground wire, and, you will find your problem. If the light only has one wire, then the ground runs through the fender, through the axle housing and back to the negative post on the battery. The rear light ground is more than likely lost due to rust between the bottom of the fender and the axle housing if you are trying to ground through the fender. When you have completed the circuit, the light will burn. A connection or ground problem cause about 85% of all electrical problems. What goes around comes around.



Write Steve Thompson at Ask The Mechanic, 2204 Lakeshore Dr., Suite 415, Birmingham, AL 35209, or email mechanic@progressivefarmer.com.

I tore into my John Deere 4440 engine—tech manual in hand—and found some shims underneath three of the cylinder liners after I removed them. What's the deal with the shims being under only three of the cylinder liners? I figured each of the cylinder liners would be treated the same. What is the purpose of the shims?

STEVE: Wet cylinder liners (coolant all around them) require specific protrusion of each liner in order to keep the height between the top of the liner and the engine block as close to the same as possible so the sealing rings on the head gasket “crush” against the top of the liner as equally as possible. Sometimes, swapping around the liners will help align the protrusion, but, sometimes, shims must be added to the top of the counterbore (under the liner lip) to equalize the protrusion. If the protrusion across all cylinders is not within specs, then the head gasket can blow. The 466-cubic-inch engine in your 4440 is the same engine used in the 4WD tractors at that time, and, the increased power pulled out of the engine made it especially important to keep the protrusion in specs. The shims will raise the liner to the proper protrusion, if needed. However, some engines had a counterbore that placed the liner protrusion too tall. This was a real problem, because the block had to be counterbored to lower the liner height. Follow the tech manual closely on this part of the overhaul of your engine so your specifications for protrusion, head torque pounds and sequence are followed. Newer machining technology has really helped to keep liner protrusion problems to a minimum.

SAFETY TIP OF THE MONTH

Be careful when unhooking a trailer that has what is called negative tongue weight. If a trailer is loaded heavily in the back, when the latch is released from the ball, the tongue of the trailer will fly up. That's a dangerous situation, because you usually turn down the jack when you unhook rather than the jack turning on you. Even though the tongue can mess up the tailgate on your truck, it is best to get out of its way if it flies up. Now you know why you see so many tailgates with that deep scratch running up the center. It's much easier for a body shop to fix your truck's body than it is for a doctor to fix your body.

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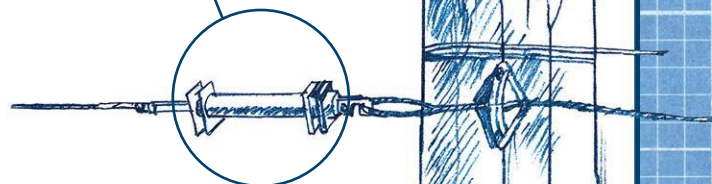
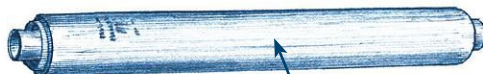
Kenneth Hinnenkamp, Melrose, Minnesota, was walking through a large barn one day and found that he could not see his fire extinguishers—even though he knew four were mounted around the building. He thought of a fix. Around the four sides of each of the 6 x 6 posts holding the extinguishers, he wrapped pieces of white plastic. The red extinguishers stood out against the white background making them easy to see should an emergency arise.

★
*Editor's
Choice*



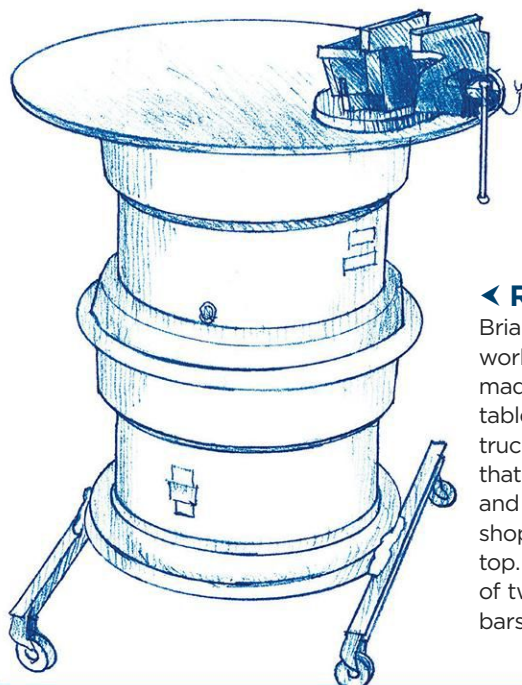
▼ WIRE STRETCHER

So, how do you keep 80 feet of electric wire pulled tight? John Sawyers, Puryear, Tennessee, has to stretch an electric fence gate across an 80-foot opening to his hay barn. To keep the wire from sagging, he attached a screen door spring to the gate handle and the wire to the spring.



◀ ROLLING RIMS

Brian Cottrell, Upton, Kentucky, made a portable worktable from scrap rims. The table stand is made from two rims welded together. For the tabletop, he salvaged a fan from an old spreader truck. The fan, he notes, is a bit concave. But, that makes it a great surface to hold nuts, bolts and tools that may otherwise roll off onto the shop floor. He also mounted a 4-inch vise to the top. Cottrell welded four wheels, two onto each of two pieces of 1-inch bar steel. He welded the bars to the bottom of the stand.



WINNING IDEAS: Win \$150 if your idea is chosen as the month's "Editor's Choice" Handy Device. Win \$50 for other ideas used on this page. To submit a Handy Device, please send clear photographs, detailed drawings and a complete explanation of your idea. With each entry, include your name, address and telephone number. Send Handy Device entries to Progressive Farmer, 2204 Lakeshore Dr., Suite 415, Birmingham, AL 35209. Sorry, but we cannot acknowledge submissions or return photographs, drawings or documentation.

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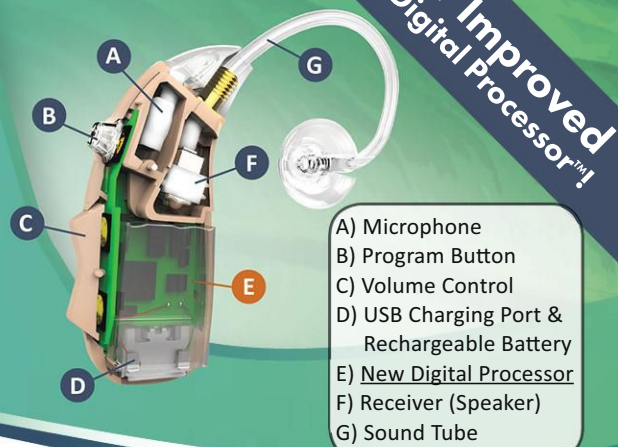


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Respect The Triangle

Understand this aspect of emotional systems to better manage your operation.

Murray Bowen, a psychiatrist who practiced

between the 1940s and 1980s, was a keen observer of families and, especially, families in crisis. He developed what is known as family systems theory, which holds that in a family, the family itself—not the individual—is the primary emotional unit. What one family member experiences or how that member behaves has an impact on the whole family, causing a ripple effect on relationships throughout the family structure.

For example, someone experiencing a high level of stress will affect the rest of the family business participants. The whole family may become more anxious with the sense of an impending blowup, or, they might become more quiet and distant toward one another. Certain family members may become stronger allies in a tense situation or family crisis, while other family members might exhibit negative or self-destructive behaviors. It may be difficult to predict exactly what a family will do in a crisis, but, to understand why they do it, it helps to look at what is happening in the context of the broader family system. How the family system functions, then, impacts how the family business performs daily.

TRIANGLES IN THE FAMILY SYSTEM

One of the foundational elements of Bowen's theory, as explained by Roberta Gilbert in "The Eight Concepts of Bowen Theory," is the concept of the triangle, a "three-



Write Lance Woodbury at Family Business Matters, 2204 Lakeshore Dr., Suite 415, Birmingham, AL 35209, or email lance@agprogress.com.

person emotional configuration ... the basic building block of any emotional system." When you look around the family business, you often see the triangle at work when two people in conflict pull in a third person—often Mom or Dad, or another sibling—to help resolve or stabilize the tension between them.

For example, someone will "complain" to Mom, and, she will either remain neutral, or, she might side with one of the parties. But, the act of complaining to Mom is an attempt to triangle her in, to deal with the tension between two people by drawing in a third person. In sibling partnerships, I often find that three is the hardest number to work with because of the tendency of two siblings to gang up on the third. (Who does the ganging up can change over time.) Another frequent triangle is two parents and a son or daughter, or a triangle consisting of two siblings and one of the parents. And, though complaining often leads to triangles, gossiping and spreading rumors are also used to triangulate someone.

DRAMA OR EFFECTIVENESS

Triangles are important to understand because they can either help, or hinder, the family's effectiveness. If the third person in the triangle sides with one of the parties, the two-against-one phenomenon can create a level of drama that distracts the family from the primary work of the business.

On the other hand, someone who recognizes that a triangle is forming can often redirect the conversation from complaint or gossip to constructive resolution. Gilbert says that "calm is catching too," and, the third person can help assess the situation and consider actions that help move toward resolution.

I've often encouraged the third person in the triangle to help the two people in conflict communicate better instead of sniping at each other from a distance. In our example and in many farm and ranch family businesses, Mom can often encourage family members to try to resolve their differences or help the conflicted parties "hear" one another.

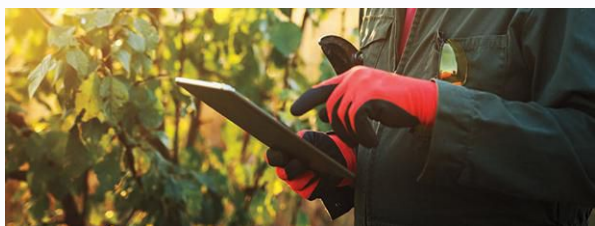
When you run into tough family business situations, look more deeply at the relationships between people, and, be careful about being drawn into an unhealthy triangle. By understanding family systems theory in general, and triangles in particular, you begin to help the whole system function better. ///



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New Connections

AFS Connect Magnum gives remote managers an interactive view of farming functions.

MODEL YEAR 2020 CASE IH
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Case IH says its new model year 2020 AFS

Connect Magnum series tractor represents the manufacturer's largest technology launch in 10 years. The AFS Connect Magnum is a high-powered tractor, purpose-built for digital interactivity.

The Connect Magnum is a tractor and a field-management solution incorporating the full integration of technology and iron, Case IH says. Connect Magnum was revealed last month at the National Farm Machinery Show, in Louisville, Kentucky.

Laid over Magnum's 32,000 pounds of iron—the largest Magnum tractor is powered by a turbocharged, 8.7-liter, 380-hp plant—is Case's Advanced Farming Systems (AFS) portal. AFS connects in real time a remote manager to the functions of the tractor and the tractor operator.

At the discretion of the farm manager, Magnum's performance also can be viewed by Case's diagnostics and repair services (including AFS Firmware Over-the-Air updates). Fault codes are interpreted by actual word descriptions on drop-down screens. Fault codes can be tracked by severity and number of occurrences (how many times did the operator try to drive through the parking brake today?).

The AFS Connect Magnum wirelessly sends and receives farm, fleet and agronomic data. From any Internet-connected computer or tablet, managers can use AFS Connect as a gateway to track field operations and fleet performance, or push data (yield maps and guidance lines) to a connected machine, such as the AFS Connect Magnum. Managers can direct data to their farm-based management systems and to third-party advisers and service providers. Case has steadily added to its list of third-party cooperators. Some include the My Farm Manager platform from Decisive Farming, Encirca services from DuPont Pioneer, AgStudio software from MapShots, Onsite technologies from AgIntegrated, GROWMARK and AgDNA.

Manager permission is a key gatekeeping function in the system. Managers share data only with the advisers and services of their choice.



The Magnum's Surveyor cab has 360 viewing and a new level of digital connectivity by way of the 12-inch AFS Pro 1200 display.



SINGLE PACKAGE

For a tractor line first launched in 1987 during the early days of the digital revolution, the Magnum series is proving to be a robust and updatable workforce multiplier. Case IH says the AFS Connect Magnum offers “integrated technology and proven horsepower in a single package.” It is iron with precision technology and connectivity.

The Connect Magnum gives the owner-manager the ability to be somewhere else besides the tractor cab, to manage other functions of the farm or even attend family events while field operations progress.

AFS Connect Remote Display Viewing allows managers to see what operators see on Magnum’s new Android-based AFS Pro 1200 management system (with a 12-inch antiglare screen). The AFS Pro 1200 has user interface functions similar to Case’s AFS Pro 700. The navigation function has been refined. The system automatically retains settings from smart implements.

“You don’t have to be in the cab to see exactly what the operator is seeing,” says a Case IH product release. Managers remotely monitor location and tractor functions such as fuel and DEF (diesel exhaust fluid) levels, engine speed, oil, coolant and hydraulic oil temperature.

Managers also may monitor critical parameters they establish. For example, a manager wants to limit planter speed to 6 mph. When that speed is exceeded over a certain length of time or over a number of times, a notification appears on the manager’s cell phone. Then, there are options to have an in-field, that day (or that hour) discussion with the operator. Similar parameters can be set up for fuel or DEF levels—that at some level, those reserves are topped off by a fuel tender previously directed to an advantageous location.

DATA ACTIONS

Case is convinced farmer-managers are eager, too, to find actionable uses for the data their equipment generates.

“It’s been like watching a [growing] wave in the ocean,” says Leo Bose, Case IH AFS marketing manager. “Two, three, four and five years ago, we begin to see this craving for data. They wanted to see where machines are in the field. Now, they want to look at yield data, as-planted data, as-harvested data and now make correlations with those and with inputs.”

Managers see competitive advantages in understanding their data, Bose believes. Data has come to drive profitability. Data allows managers to carve out better control input costs, find higher margins in harvest results and better match labor and hours to farm functions. “How do we look at productivity out of a unit?” Bose asks. “If I have three or four combines out in the field, I know I have three or four operators with different skill levels. AFS Connect looks at that to provide a deeper level of information.” ///



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Survival for the Long Term

Two farming operations focus on diversification to weather tough times.

In mid-September, the slow churn of what had been Hurricane Florence dumped 30 inches of rain in four days on eastern North Carolina's Strickland Farming, near Mt. Olive. Owner Reggie Strickland watched as the waters from a nearby creek inched up the business sign in front of their office.

Racing to beat the storm, workers finished tobacco harvest the day before the downpours began. "We'd have almost been better off leaving the crop in the field," says 55-year-old Strickland, "because we then lost power for several days and couldn't run the fans in the curing barns." Without that curing process, the tobacco's quality deteriorates rapidly and becomes worthless.

Fortunately, tobacco isn't the only crop on which Strickland relies. The value of having a diverse operation can sometimes be best appreciated in the wake of a natural disaster. In the case of Strickland, what he grows and why is a combination of geography, soil type and access to markets.



The 4,200-acre farm sits amid sandy, quick-draining soil, which makes it ideal for the growth of crops like sweet potatoes and vegetables. The region is also home to some of the highest-producing counties in the country for hogs and poultry. Strickland has raised contract hogs for years and, beginning a year ago, began growing turkeys.

"We can't make a living growing just corn and soybeans," Strickland says. "Our average corn yields are around 135 bushels per acre, while our soybeans are 40 bushels per acre." However, the nearby presence of numerous pork, broiler and turkey operations is great for corn demand. Strickland often receives up to 70 cents per bushel above the Chicago Board of Trade price.

TIMING IS IMPORTANT

Prior to the storm, Strickland Farming had harvested 1,000 acres of corn and

Reggie Strickland added hogs and turkeys to his corn, soybeans, tobacco and varied vegetable crops.

213 acres of tobacco. Earlier in the summer, they had picked 150 acres of cucumbers and 20 acres of banana peppers. Following the rains, they were able to resume harvest of 350 acres of sweet potatoes while planning for the harvest of 1,500 acres of soybeans.

The Stricklands (Reggie's father, Garrett, is semiretired, and, family members have farmed here for eight generations) have grown cucumbers on and off for several decades, the result of their relationship with nearby Mt. Olive Pickle Co., which has been in business since 1926.

The cucumbers and banana peppers, like sweet potatoes and tobacco, are labor intensive. Strickland Farming hires more than 100 foreign agriculture workers under the federal H-2A program. The workers—those at Strickland Farms are from Mexico—are busy from April to November, moving between various jobs on the multiple crops. On a day we visited, more than 60 workers were harvesting cucumbers, while, elsewhere, another two dozen were “topping,” or removing the flowering part of the tobacco plants to spur leaf growth.

While the sweet potatoes, cucumbers and tobacco are all high-value crops, they are a necessity to justify the expense of keeping the workers for months. In 2018, H-2A workers in North Carolina were paid a mandated wage of \$11.46 per hour. Strickland Farming also has to pay for their housing and transportation while in the country.

The labor costs are high, but, so is the gross income from the specialty crops. An average gross for sweet potatoes might be \$3,000 per acre, but, \$2,500 of that goes to labor, Strickland explains. Likewise, the per-acre gross for tobacco is about \$4,500, with multiple trips in the field using hand labor. By contrast, the gross income from an acre planted to corn is about \$600 with an average yield.

HANDS-ON BUSINESSES

Diversification at Handsaker Farms, in central Iowa, near Radcliffe, seems almost a necessity given the number of family members who are or have

been involved. The family farms 3,800 acres, raises contract hogs, runs an excavating and drainage tile business, contracts more than 1,000 acres of their farm to edible pea and sweet corn production, and operates a Beck's Hybrids seed dealership.

“I think we're diversified enough that we have a few extra cards to play with,” 36-year-old Jacob Handsaker says. He, along with brothers Brian, Brett and cousin David Handsaker, make up the management team for the businesses. Jacob's father and two of Jacob's uncles are also still involved with the farm. Three additional cousins work at the excavating business, Hands On Excavating LLC. ➤



Producers who are pushing the envelope on yields with Bt hybrids and other excessive residue producing crops, all have the same issue: “What to do with all of the heavy crop residue after harvest?”

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That enterprise got its start 15 years ago, when the Handsakers purchased a used excavator for a good price then learned the business from a family friend in the trade who was retiring.

“With that equipment on hand, it was a natural fit that we also got into tiling,” Jacob says. “The timing was good; we were really getting going in that business when the \$8 corn prices hit. Everyone was putting money into tiling on their farms, and, the big tiling operations were busy with all the large jobs.” The Handsakers were able to secure many smaller jobs.

“We were hungry for the work, and, we didn’t turn down anyone,” Jacob says. In addition to tiling, the company now does excavations for everything from housing developments to commercial buildings.

OPERATIONS STREAMLINED

Opportunity struck again a few years ago, when Brian Handsaker was talking to a friend working in the

Brothers Jacob, left, and Brian Handsaker diversified their operation with excavation and drainage tile work.

college of agriculture and life sciences at Iowa State University. The friend, a professor,

“We watch costs like everyone and know what the margins are and where we need to be.”

—Jacob Handsaker

had been contacted by Minnesota-based Birds Eye foods seeking farmland in the area for contract production. Now, that company facilitates the planting and harvest of 600 acres of sweet corn and 500 acres

of sweet peas on Handsaker land.

The peas are harvested by mid-June and the sweet corn by early August. The Handsakers’ double-crop soybeans follow the pea harvest.

“It’s working good so far,” Jacob says. “The peas spread out our planting window, so, we aren’t having to do that 500 acres at the same time as our corn and soybeans. As for the sweet corn, that’s 600 acres we don’t have to harvest in the fall—the company sends specialty equipment for that.”

Jacob describes the profitability of the peas and sweet corn as similar to that of commodity corn and beans, with the added savings of fieldwork they don’t have to perform. Additionally, the Handsakers can install drainage tile on those specialty acres at a time of the year (August) when they wouldn’t be working on anyone else’s farms.

Each separate business entity is evaluated on its own merits, Jacob explains. “We watch costs like everyone and know what the margins are and where we need to be,” he says.

The business attitude is the same for North Carolina’s Strickland. All crops and livestock are evaluated as separate businesses. He says the jury is still out on growing banana peppers—the labor needed to harvest even 20 acres is daunting.

“We really need to grow them with drip irrigation under black plastic,” Strickland says. “The drip irrigation would be a more efficient use of our water, and, the plastic reduces the labor needed for weed control. But, the cost of doing that runs about \$2,000 per acre, and, I’m not sure the production and price will justify the expense.”

Strickland has about 800 acres under well-fed center-pivot irrigation installed after corn prices shot up early in this decade. That means about 500 acres of corn are irrigated every year, with average yields of 200 bushels per acre. The cucumbers and banana peppers are also irrigated.

The irony is that, despite the disaster of too much water this year, lack of moisture is often the bigger issue for Strickland Farming. Relentless high heat in season, coupled with sandy soils, means that anything grown on dryland needs frequent rain.

“We say around here that we’re only 24 hours away from a drought,” Strickland says. ///





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When Chickens Go to School

Across the country, kids are finding best friends sometimes come with feathers.

Give a farm animal a name, and, its life expectancy seems to leap to history-making proportions. It's a fact that holds true for chickens, especially once they've crossed into the Shangri-la world of schoolyard flock member and best friend to a room full of children.

Teachers across the country are using small chicken flocks to teach students about agriculture and basic biology. In some cases, these flocks allow students from diverse backgrounds and with various learning styles to connect on a deeper level.

Jennifer Ferrell, a teacher at Lawton Elementary, in Oviedo, Florida, recalls the day a special-needs boy met the school's chickens for the first time.

"He petted Caramel, our Buff Orpington," she recalls. "His whole demeanor changed. He went from

restless and anxious, to calm and focused. He was so proud of himself."

That's the kind of story that makes Katie Signorelli feel what she's doing is making a difference on a whole new level. She is backyard flock marketing manager with Purina Animal Nutrition, which, in recent years, has promoted the use of chicken flocks as a teaching tool in schools.

Signorelli says chickens add something exciting to a school's curriculum. They build students' senses of responsibility and help them learn animal care and where food comes from.

"We've had great conversations with teachers who added backyard chickens to their school curriculums," Signorelli says. "They are reinventing the way lessons are taught; their students are learning by doing."

She adds the school chickens can add to those inevitable, end-of-the-day conversations parents and children often have.

“When parents ask, ‘What did you learn in school today?’, their children share this newfound flock knowledge,” she says. “We’ve seen teachers incorporate lessons on how to hatch eggs, what chickens eat and how an egg is formed and laid.”

BROAD REACH

Nancy Dimitriadis believes in the power of chickens. The science teacher at St. Paul’s School, Brooklandville, Maryland, has raised both chickens and ducks with her students for more than two years starting in April 2016.

“The students built both the brooder and the coop,” she says of their facilities. “They collect eggs daily, and, we’ve even hatched chicks and ducklings in our classroom. Through this project, they’ve learned about the life cycle of a chicken in a hands-on way.”

St. Paul’s has used its flock to help create bonds with other schools from the surrounding Baltimore city area. ➤

Daily egg collection is a big deal at schools with flocks. Some classes even hatch chicks to learn about life cycles.



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“We have an educational organization called ‘Bridges,’” Dimitriadis explains. “It brings motivated Baltimore city students to our campus and offers enriching, educational experiences to them. Bridges’ fourth- and fifth-graders have built dust baths for the chickens, chicken swings and boredom busters.”

Urban areas and inner cities are some of the most significant growth centers for flocks. Jennifer Musick, a third-grade educator at Rosamond Elementary School, in California, says “kids from all grade levels go to the garden first thing in the morning to let the chickens out.

It has taught our students respect for their surroundings, along with responsibility, concern and empathy for living creatures.”

Along with the teaching moments that can come with chickens, there’s a more basic



BILL DENISON

Classroom pets such as chickens help teachers share lessons of responsibility and animal care with elementary-aged children.

reason flocks seem to be multiplying in urban areas. Patrick Biggs says, simply put, people want more control over what they eat.

Biggs is a nutritionist with Purina. “It’s an opportunity to be a farmer on some level without having to be a large farmer. That’s how people see this,” he says.

There are unique challenges that come with having chickens in a small area, whether it’s a backyard or on school property. Biggs says it’s important to consider from the start what size flock you want and how much space that is going to require.

“I’d start by saying you don’t just want to have one chicken,” he notes. “I recommend having at least three. One chicken is always kind of confused; she’s looking for her flock. With two, you usually have an alpha, and the other one gets picked on. With three,



GETTY IMAGES

Chicken Facts

Thinking about a small flock? While chickens are pretty self-sufficient, there are some important considerations before chick shopping.

What Does the Local Law Say? The first question every prospective chicken owner needs to ask is whether local ordinances allow chickens. Don’t forget noise ordinances, especially if you want a rooster or two.

How Much Space Do They Need? You are probably destined for failure if you don’t provide chickens with enough space. Anticipate a minimum of 10 square feet of outdoor space per chicken and 3 square feet of coop space. The coop is where they will be closed up at night to protect them from predators.

Which Breed Is Best? Some breeds are more kid-friendly than others, so, consider disposition when choosing a breed. Silkies, for example, are sometimes referred to as the “lapdogs of chickens” because they can be very affectionate. Other breeds families might like include Orpingtons, Plymouth Rocks, Brahmas and Ameraucana. Whichever breed you select, be sure to buy from a reputable hatchery, and make sure the chicks have been vaccinated for coccidiosis and Marek’s disease.

White, Brown or Blue Eggs? Depending on the breed, eggs produced can be surprisingly colorful. Breed research will tell you which types of chickens lay colored eggs, egg sizes and laying frequency.

Who Needs a Rooster? It surprises some people that you do not need a rooster to get eggs. Hens will lay eggs with or without a rooster present. If your goal is to raise baby chicks, however, you need a rooster to help create fertile eggs.

What Do Chickens Eat? Do not skimp on chicken feed, and, don’t think table scraps are going to do the trick when it comes to nutrition for a backyard flock. It’s fine to throw out some grain as a treat or open up a ripe watermelon or a squash to watch them eat, but, it’s important that 90% of a chicken’s diet comes from a feed formulated for growth and stage of life. Look for starter feed specifically for egg-laying breeds, and, feed this from Week 1 of life through about Week 18. It should be high protein to help support strong growth. After Week 18, or when hens begin to lay eggs, switch to a complete layer feed. For strong shells on eggs, you may need to supplement a calcium product if it’s not already in the feed. If you have questions, ask your county Extension agent or the nutritionist at your local feed store for guidance.

you distribute the pecking order behavior, and, there's less stress on the birds."

A rule of thumb with regards to space is about 3 square feet per chicken—inside the coop. Outside the coop, figure a minimum of 10 square feet per chicken. And remember: Too little space creates stress and leads to behavior problems, illness or death.

FOCUS ON FEED

Biggs says as pampered as some chickens are today, they often aren't having their nutritional needs met.

"There is a lot more to feeding chickens than throwing out a handful of ground corn or scratch grains," he says. "A lot of people think that's all it takes, but, in a backyard setting, where there's not a lot to choose from, it's really important to give them a complete feed. The scratch grains are fine as a treat, but, they are like candy, and they should be no more than 10% of what you feed. The other 90% should be a complete feed with the 38 different nutrients chickens need to be able to lay eggs and remain healthy."

He adds it's vital to feed to stage of life. A chick has different nutritional needs than a hen laying eggs.

While a lot of farmers might find the whole city-

chicken connection puzzling, Biggs says he sees it as an opportunity for people to feel a connection with traditional agriculture. Aside from the idea of naming the chickens, that is.

"To be honest, most people in urban areas see these chickens as more pets than livestock. They are pampered and cared for. The family, or the school, has put time into raising them, and they

—Katie Signorelli

have names. And, we all know, once you give a chicken a name, it's really hard to put her in a pot for dinner." ///

FOR MORE INFORMATION

- Purina Feed: www.purinamills.com/chicken-feed
- Louisiana State University Poultry Housing Designs: bit.ly/2CLR0Lu
- Murray McMurray Hatchery Breed Selection: bit.ly/2oYXYD4

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Italian Night

This pasta dish is sure to please with mini meatballs and plenty of cheese.

MINI MEATBALL BAKED PENNE

SERVES: 6

TOTAL TIME: 1 HOUR

1 pound penne pasta
1 pound hot or mild Italian sausage, removed from casings
¼ cup Italian-style breadcrumbs
¼ cup plus 2 tablespoons grated Parmesan cheese
1 large egg, beaten
1 jar (24 ounces) marinara sauce
1 cup whole-milk ricotta cheese
8 ounces fresh mozzarella, drained from liquid and chopped into 1-inch cubes
Fresh basil or parsley, garnish

1. Preheat oven to 350°F. Set a large pot of salted water over high heat; bring to a boil. Cook pasta 6 minutes; drain and rinse under cold water to stop the cooking process.
2. To make meatballs, mix sausage, breadcrumbs, ¼ cup Parmesan and egg; form into small, 1-ounce balls (about 1 inch in size). In a large skillet, sear meatballs 5 minutes each side or until golden and cooked through; set aside to cool on a plate lined with paper towels.
3. In a large bowl, mix marinara sauce and ricotta cheese until smooth and creamy; toss in pasta. Add meatballs and mozzarella; mix. Pour into a shallow 9 x 13 baking dish; top with remaining Parmesan.
4. Bake 25 to 30 minutes or until cheese is melted and bubbly. Garnish with basil or parsley.

OLD SCHOOL ITALIAN CHOP SALAD

SERVES: 4-6

PREP TIME: 15 MINUTES

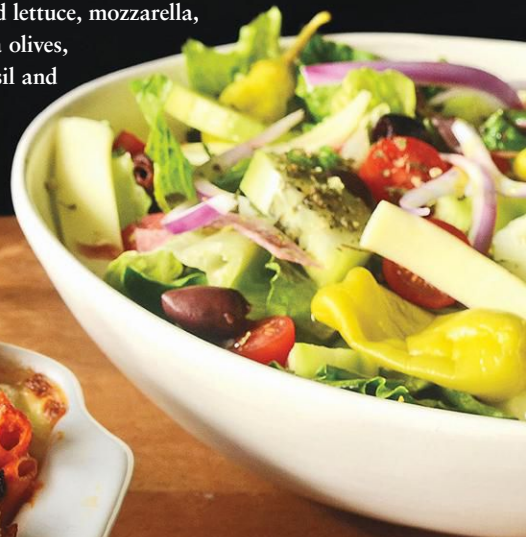
DRESSING:

⅓ cup extra-virgin olive oil
3 tablespoons red wine vinegar
½ teaspoon garlic salt
1 teaspoon dried oregano
½ teaspoon kosher salt
½ teaspoon freshly ground black pepper
½ teaspoon granulated sugar

SALAD:

1 large head romaine lettuce, chopped
8 ounces fresh mozzarella, drained from liquid and torn into pieces
1 large roasted bell pepper, chopped
½ cup chopped, pitted Kalamata olives
½ cup chopped Italian salami
½ small red onion, thinly sliced
1 handful fresh, torn basil leaves
Pepperoncini peppers

1. To make dressing, whisk together all ingredients in a large bowl until well emulsified.
2. To make salad, add lettuce, mozzarella, bell pepper, Kalamata olives, salami, red onion, basil and peppers to dressing; toss to coat.



Recipes and photos
by Rachel Johnson
www.stupidgoodrachel.com

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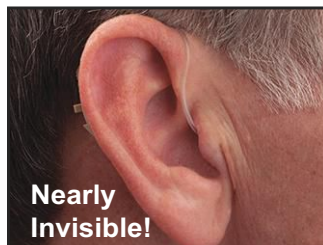
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A photograph of two men in a cornfield. The man on the left is wearing a blue polo shirt with "inVISION" on the sleeve and a grey cap, gesturing with his hands. The man on the right is wearing a dark blue polo shirt and a tan and black cap, holding a tablet. They are standing in a lush green cornfield with rows of plants stretching into the distance under a clear sky.

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Hard work and a love for the land are what one young ranching family relies on to get through the challenges.



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Building A Reputation

Ranchers face a lot of obstacles, but, there's wisdom borne out of the hard times.

Fresh thinking combined with an entrepreneurial spirit led Sage Askin down an unconventional path as a successful young rancher.

The polite, soft-spoken Wyomingite wasn't interested in sharing his story publicly, however, unless, in his words, "the sole intent was on helping other young ranchers begin their careers."

Sage has a little experience when it comes to the obstacles young farmers and ranchers often face. One of the biggest, he notes, is finding the land on which to start an operation.

Today, without 1 acre of their own, he and wife, Faith, are proof it's possible to have a successful and thriving operation without land ownership. They are also proof it's not easy. There are lots of things the Askins think about on a daily basis, but, one point never leaves their minds: Reputation is everything.

The 30-year-old Sage came to his way of life with a strong work ethic learned from family. His aging grandparents still run cattle on a ranch in eastern Wyoming. His father put in long hours working for other livestock producers in the region, while his mother helped make ends meet cleaning houses, laboring at Burger King and managing a horse barn.

Sage was convinced at an early age he wanted to ranch. He armed himself with as much knowledge and equipment as he could. He raised 4-H and FFA steers, using part of the proceeds to buy tools for fencing and

machinery repairs. And, he grabbed hold of all of the knowledge he could during his time as a student at the University of Wyoming.

He graduated with a bachelor's degree in rangeland ecology and watershed management, and five minors: agroecology, forestry, reclamation and restoration ecology, soil science and wildlife and fisheries biology. He paid his way through school working as range technician for a conservation association, a coal mine blasting crew member and a ranch intern, where he and others practiced Allan Savory-type holistic grazing management. That experience helped define his production philosophy.

"In ranching, you have to be a holistic manager," he believes. "A biological system is always dynamic. If you manage for one thing today, you are managing for a snapshot in time that may not be representative tomorrow, much less five years from now."

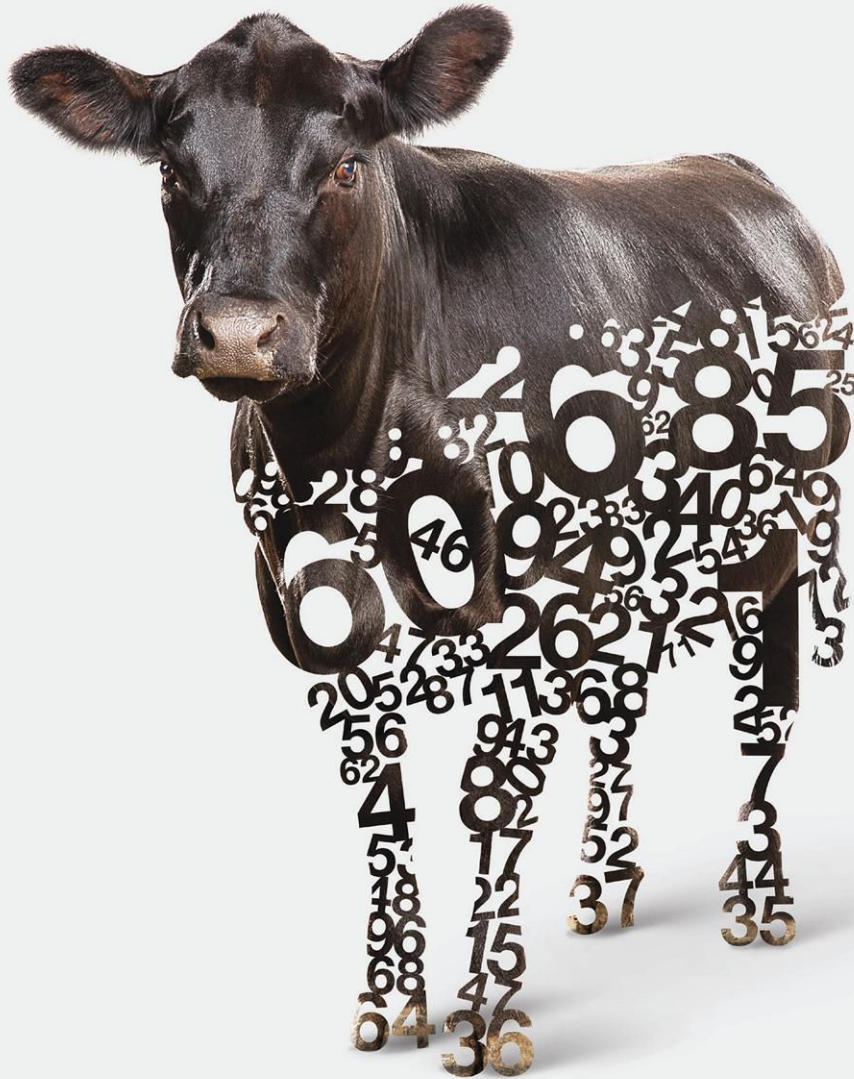
CHOICES AND REPUTATION

Sage found himself in a great position in 2014. He had graduated college and leased a ranch in western Wyoming, managing the cattle for 75% of the proceeds.

"Faith and I had just started dating, and, we sold that first set of steer calves for \$3.48 per pound," Sage recalls. It was December 2014 during the height of the cattle market.

Sage made enough money to purchase 300 sheep. By the time he and Faith married in 2016, the flock numbered 1,000. ➤

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“We thought sheep would complement the cow herd by not using the same forage base. Also, cattle were so expensive at that time, we thought sheep would be a better investment,” he notes.

When the lease arrangement ended because of the sale of the ranch, Sage took 1,000 ewes and leased a high desert operation in southeast Wyoming. He began running sheep on shares for other ranchers, in addition to his own flock.

During a three-week period beginning Christmas Day 2016, tragedy hit. Four blizzards killed half the ewes. Sage remembers it as the “winter death apocalypse.”

In those trying days, the young producer showed with his actions that his belief in the importance of reputation was a core value.

“We had to make the other ranchers whole,” he says. “That meant giving them all of our living sheep. Faith and I took a huge hit, because we were still making payments on half our flock. We’re still digging out from that, but, we’re getting closer.”

It was an especially hard lesson, Sage explains, but one they learned from.

“That taught me that you don’t have any control over luck, the markets and weather,” he says. “We now do an enterprise analysis before jumping into any opportunity. ➤

Intensive Grazing Management Tips

An intensively managed grazing program is a key to Sage Askin’s success.

On rangelands, livestock is not in the same pasture at the same time two years in a row. Grazing must be staggered to allow cool- and warm-season grasses to go to seed in designated pastures each year. Some pastures are rested the entire year.

This means there is something green and actively growing from early spring through late fall, including cool-season species like wheatgrasses, bluegrasses and sedges, and warm-season plants such as prairie sandreed and blue and hairy grama.

On the Askins’ home ranch in east-central Wyoming, they move cattle every one to three days during the spring, utilizing

portable electric fencing to create 100-acre paddocks.

“We rely on quick movements since cool-season grasses don’t perform as well with close grazing,” Sage says.

In areas dominated by old, rank warm-season grasses, he notes, “We’ll do targeted, close-to-the-ground grazing in the spring to help stimulate plant growth.”

To best manage warm-season grasses, they allow plenty of rest after use.

To maximize the land’s potential during the long-term, they hire a private rangeland monitoring consulting company to help track trends.

“We want to determine if we’re going in the right or wrong direction, because most of the changes in a warm-season grass community occur slowly,” Sage says.

Intensively managed grazing is paying dividends. Sage notes they see healthier grasses and higher production. The native forb community is more vibrant, big bluestem (a warm-season grass) is reestablishing in some areas, and habitat for wildlife is improving.

“We believe rangelands in our part of the country should have a good blend of cool- and warm-season grasses. We love cool-season grasses in the spring

and winter because they carry much more nutrition, and, we love the warm-season grasses for their production characteristics,” Sage says.

On the ranch they live on, they also manage a 160-acre pasture under pivot irrigation. About 70% of the field is in alfalfa, with tame grasses

occupying the rest. When hay prices are high, they’ll harvest the first cutting for sale. But, typically, Sage says, some is cut and baled for winter feeding, while the rest is grazed year-round.

To maximize the grazing, they created 5-acre paddocks with portable electric fencing, moving as many as 300 cow/calf pairs or 1,000 steers through the paddocks on a daily basis.

“During the growing season, we’ll achieve about 60 animal days per acre in grazing, and, we’ll take about another 60 animal days per acre off in hay,” Sage says. “Then, we’ll swath-graze during winter, taking another 100 animal days per acre or even 150. The winter windrow grazing is working very well for us.”





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¹ Data on file. Study Reports No. 2239A-60-00-029, 2239A-60-00-030, 2239A-60-00-033, 2239A-60-94-003, 2239A-60-94-007, 2239A-60-94-067, 2239A-60-94-068, 2239A-60-94-070, 2239A-60-95-156 and 2839A-60-97-123, Zoetis Inc. All trademarks are the property of Zoetis Services LLC or a related company or a licensor unless otherwise noted. © 2018 Zoetis Services LLC. All rights reserved. DMX-00090



“Had we run a best- and worst-case scenario before putting 2,000 sheep on the same rangeland, we would have identified weather as a big risk.

“I would like to blame our disaster on Mother Nature. But, the whole thing was my fault, and, it’s something I’ve come to terms with. It comes down to sound management.”

DIVERSIFIED OPERATION

Today, the couple has five successful enterprises. They custom-graze cows, custom-graze stockers, run sheep on shares, lease cows and are developing their own heifer program. The work is going on across two ranches in Wyoming and one in Montana. They graze on about 50,000 acres under their management and additional acres managed by others. This vast area allows them to run nearly 5,000 head of livestock, mostly owned by others.

Of this, they custom-graze about 450 to 750 cow/calf pairs and 400 to 1,000 stockers. They are also slowly rebuilding the sheep herd. They own about 100 ewes now and run nearly 3,000 more on shares.

Concerning the latter, Sage says, “Other producers own the sheep as an investment, and, we get two-thirds of the lamb crop. We’re all rewarded for excellent management.”

The growing heifer development program is one of their latest ventures to improve cash-flow and make their overall business more sustainable.

“We try to purchase undervalued commercial heifer calves over the winter that we believe would still make good cows. We then use a two-part breeding program,” Sage explains.

First, they artificially inseminate (AI) all heifers using semen from low-birthweight bulls to help ensure calving ease.

“Thirty days later, we ultrasound all of the heifers and sell the pregnant ones,” he says. “We use AI and cleanup bulls to expose the rest of the heifers to synchronize with the cow herd for May/June calving. We keep those heifers to build equity in our leased cow herd.”

The Askins lease about 250 cows and now own about 110 heifers, which are in addition to the pairs they graze on shares.

RESOURCE MANAGEMENT

Though traveling between the three ranches in eastern Wyoming and Montana takes times and money, Sage says, “Cash-flow has been an important key for us.



Instead of relying on one check in the fall, which I believe is a major risk to any young person starting out in ranching, we’re getting a lot of little checks throughout the year. That helps us get from Point A to Point B.”

Additionally, he notes, “We’re using enterprise stacking to better manage and utilize range resources. We have learned that it’s a real waste of land to only run one type of livestock.”

Enterprise stacking is the use of two or more enterprises on the same land to utilize resources better and boost income.

In Sage’s case, this means they graze sheep in addition to cattle on ranches that historically only had cattle. On one ranch, goats have been added to the mix to bolster grazing efficiency and, ultimately, profits further.

The Askins use a combination of Savory’s holistic-planned grazing, Jim Gerrish’s “Management-Intensive Grazing” and their own growing skill set to make it all work.

“We’re focused on ecosystem health,” Sage stresses.

Learning the expectations of lessors and keeping one’s word have also been crucial to their accomplishments. “A businesslike ranching or farming is based on reputation, and, for most of us, it’s also based on equity,” Sage says. “When a young person hasn’t had time to build either one of those things, it can be a major challenge.”

Because of that, he emphasizes, “It’s vitally important to focus on reputation from the start. The biggest thing people look for is honesty and the ability to follow through with what you say you’re going to do.” ///



FOR MORE INFORMATION

- Askin Land & Livestock: www.askinlandandlivestock.com
- Savory Institute: www.savory.global
- Jim Gerrish Management: www.americangrazinglands.com

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Grazing Options

These innovative systems help Southern Plains producers boost productivity.

Regardless of where cattle graze, there are ways to maximize productivity. Few places make that more challenging than the Southern Plains, where producers need to graze herds efficiently while raising crops and utilizing conservation practices that often include cover crops.

Jason Warren, Oklahoma State University (OSU) Extension specialist for soil and water conservation, says when it comes to grazing and cropping systems in the state, one of the more inventive approaches is to graze summer cover crops between wheat crops.

“OSU has plenty of data to show that summer covers do not generally impact wheat grain yield in central Oklahoma,” he says. The system can mean an increase in annual forage production, but, it’s an advantage that comes with a set of challenges.

CONTINUOUS GRAZE-OUT

Producers who plant fast-growing summer covers, like sunn hemp, sorghum-sudangrass or cowpea must be quick to utilize the forage. They should be grazed prior to entering the reproductive growth stage, a window that could be missed if a herd is too small. It’s important to keep enough residue on soils to protect against erosion.

Warren says producers can utilize continuous graze-out with a combination of these summer cover crops followed with cool-season forages including wheat, triticale, rye, barley, oats or even a mixture of these. The summer cover would be terminated in July or early August to get another cool-season forage planted.

DOUBLE-CROPPING CHANGE

Another option is to replace double-crop plantings with forage grazing in the form of a cover crop. Instead of planting another crop after winter wheat is harvested in June, forages are planted and then grazed. The next crop would be planted the following spring.

Warm-season forages can be planted anytime between June and September, with the planting time dependent on forage needs. Warren says among the most popular versions of this system is planting a warm- and cool-season forage mix, which provides residue after winterkill as fodder and a cool-season grass for protein.

The advantage of a system such as this is there is less chance of losing a crop planted in summer, and, it



Southern Plains cattle producers are employing a variety of innovative grazing systems. BARB BAYLOR ANDERSON

offers flexibility for cattle producers. If corn, soybeans or milo are planted after a wheat crop, the chance of the crop failing is higher than it is for a forage crop.

“Forages don’t have the critical growth stages that a grain crop would have like pod-filling,” he explains. August-planted covers also provide a nice blanket of crops during late summer and will limit the growth of weeds. With less weed pressure, a herbicide application can be eliminated.

DYNAMIC ROTATIONAL GRAZING

Dynamic rotational grazing is an alternative grazing system where producers plant cool-season grasses in the fall, followed by warm-season forages whenever moisture is available. Wheat for grain can still be planted in this system in October.

Warren says cattle graze cool-season crops down to a residue level, then they are removed. Another crop of warm-season grass is planted either early or late in the summer, depending on moisture.

“I like this system, as wheat alone is not very profitable right now, and, you can have forage nearly year-round,” Warren notes. Dynamic rotational grazing has challenges. Getting enough cattle out to eat rapidly-growing, warm-season grass before it begins to lose condition can be a problem. Also, providing water to all of the cattle needed to graze when the grass is ready can be a concern depending on field location. ///

FOR MORE INFORMATION

To view a webinar on these systems by Jason Warren of Oklahoma State University, visit www.greatplainsgrazing.org/webinars.



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zoetis



No Cost, Big Impact

Body condition scoring is a powerful management tool for cow herds.

One simple tool can help any cattle producer make good nutritional decisions, sort animals correctly and even predict reproductive success. Known simply as “BCS,” it’s a technique of assigning a body condition score to every cow in the herd and managing her based on that score.

“This only takes a set of eyes, and, if you want to go high tech, you write it down on a piece of paper,” Matt Hersom says. The line about going high tech is one this beef Extension specialist for the University of Florida uses often, and, it usually gets him a laugh in front of groups of cattle producers. His goal is simple: Get them listening, and, get them comfortable with this time-proven concept.

“We, in the cattle industry, have this tool at our disposal, and, it’s incredibly powerful. It doesn’t cost us anything. Anyone can learn this and utilize it. There’s no reason not to,” Hersom says.

FIND THE BCS SWEET SPOT

A body condition score is simply a visual assessment of how much fat a cow is carrying. Just like people, she can have too much or too little. Either way, it impacts her nutritional needs and her ability to reproduce or feed a calf. That, in turn, affects the size of the calf crop and weaned weights of those calves that do hit the ground.

In studies using BCS as a cow herd management tool, Ryon Walker, livestock consultant with the Noble Research Institute, notes that over a 75-day breeding season, body condition will be a strong determinant in percent of cows bred.

For example, 56% of cows with a BCS of 3 will be pregnant in that 75-day period. At a BCS of 5,

however, that jumps to 88%; at a BCS of 6, it’s 89%. Miss that interval, and, it starts to drop off, going to 67% at a BCS of 7.

BCS is gauged by looking at six spots on a cow: backbone, tailhead, pins, hooks, ribs and brisket. Based on the criteria listed below, the cow will fall into one of nine scores, with 1 being pretty much a walking skeleton, and, 9 being extremely obese.

In a mature cow, it takes about 80 pounds to move up or down one BCS. So, if a cow is at a BCS of 4, and, she needs to be at a 6 for breeding, she’ll have to put on about 160 pounds. Figure 2 pounds a day average gain, and, you can see how long it can take to make up lost condition.

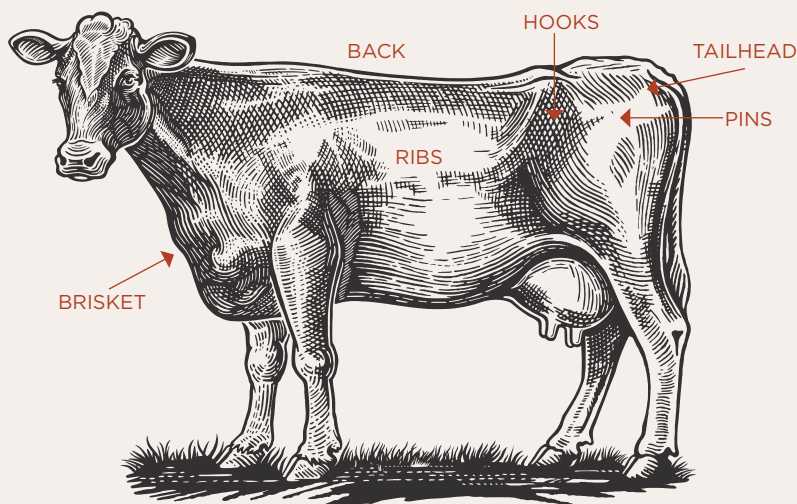
“To gain BCS,” Hersom notes, “a cow has to increase its intake to consume more energy, which can be directed toward fat and lean tissue gain.”

There is a cost analysis element that should come into play when a cow needs to gain significant body condition. First, consider whether she is a viable part of the breeding herd or on the cull list. If she’s going to be culled, what will it cost to carry her and maintain or improve BCS? If she’s in the breeding herd, what will it cost to carry her for another year if she doesn’t conceive due to low BCS? What would it cost to get her to the right BCS for breeding successfully? Every producer has a different set of resources, so, every answer is different.

“The key thing to understand is you can lose body condition on a cow faster than you can put it back,” Hersom explains. “There are scenarios where cows lose, especially right after calving, when they are hit with the demands of lactation, a recovering reproductive system and the need to initiate reproduction again. She is at peak caloric requirements when this is going on, and, it’s easy to lose condition. It’s like a freight train. Once it gets going, it’s hard to stop and turn it around. Cows lose condition at the most critical times fairly easily. First-calf heifers even more so.”

Hersom tells producers to start feeding or supplementing cows before they think they need to. “By the time you can see there’s a loss, they’ve been losing for a while,” he notes.

“The first places most producers can easily spot fat loss on a cow are the ribs and the spine,” he says. The brisket area is often the hardest to assess. Some breeds are more difficult to ➤



GETTY IMAGES



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evaluate. Hersom notes Bos indicus-influenced cattle, for example, have more skin down in the brisket area. They are also constructed differently than an Angus-influenced animal, which is often blockier in build.

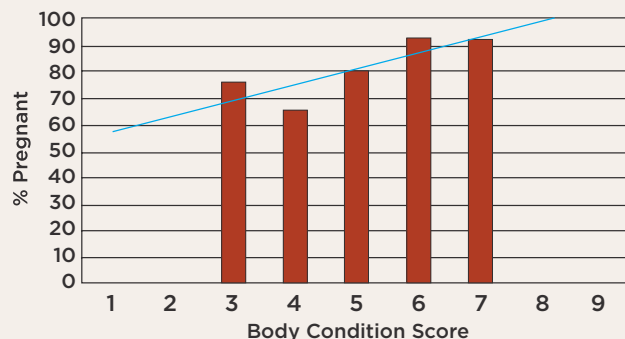
“Brahman influence are more angular in construction,” Hersom continues. “With Angus, a novice to BCS will see that blocky build and assume she is fat or has a heavier muscle disposition than the Bos indicus. What’s important is to use those six areas and look at the fat covering rather than how much muscle that animal carries. Bos indicus breeds will always look thinner than the Bos taurus cattle.”

Because most cattle fall between a BCS of 3 and a BCS of 6, those criteria are followed. Below a 3 or above a 7, adjustments need to be made quickly.

WHAT IS A 3 BCS?

These cattle will appear thin, and you will note:

- ▶ Backbone, hooks and pins are prominent.
- ▶ Body fat is not obvious.
- ▶ Weight needed to reach a moderate condition of 5 is 160 pounds.



Relationship of cow body condition score to the percent of cows in the herd that become pregnant.

UNIVERSITY OF FLORIDA IFAS EXTENSION

WHAT IS A 4 BCS?

It can be hard to differentiate a 4 BCS from a 3 BCS as a novice. The 3 BCS is considered “marginal.” Note:

- ▶ Backbone, hooks and pins are still prominent but less visible.
- ▶ Muscle tissue is abundant.
- ▶ Fat is beginning to cover ribs, but, they are visible.
- ▶ Weight to reach the moderate condition of a 5 is 80 pounds.

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WHAT IS A 5 BCS?

For many, this is the ideal flesh to have a cow in at weaning. Note:

- Muscle tissue is near maximum.
- Hooks and pins are visible, not obvious.
- Ribs are covered slightly with fat, with the last rib still visible.

WHAT IS A 6 BCS?

This is considered by many to be the ideal condition to have a cow in at calving. She will lose down naturally to the 5 BCS through lactation, so, it's best to have her here when she calves. Note:

- Muscle tissue is at a maximum.
- Hooks and pins are less prominent, more rounded.
- Fat deposit behind the shoulder is now obvious.
- Ribs are completely covered, with fat beginning to cover the rump.

TOO MUCH OF A GOOD THING

Hersom notes that first-calf heifers should always be at that BCS of 6 at calving, because she is in such a high-energy time of life. He cautions against the idea

that if a 6 is good, a 7 or an 8 is better. "If she gets too fat, especially as a first-calf heifer, she can develop fat in her udder, which will negatively impact future milk production potential."

Hersom says sometimes, bred-heifer sales tend to bring out a heavier BCS animal, because she will look good in the sale ring. But, heifers that are too fat sometimes don't adapt well to new nutritional environments.

"You've almost set her up to fail if you overdo it. She'll probably never achieve the level of nutrition she was at in that home environment again. So, there is a balance it's important to maintain if the goal is to have her be a successful member of the cow herd for years to come." ///

FOR MORE INFORMATION

- "Implications of Cow Body Condition Score on Productivity": edis.ifas.ufl.edu/an319
- Noble Research Institute: www.noble.org/news/publications/ag-news-and-views/2017/september/body-condition-score-as-a-tool

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Test Don't Guess

Deworming by the calendar may cost more money and cause resistance. It's time for a change.

In his role as Texas A&M Extension Veterinarian, Tom Hairgrove visits ranches from one end of Texas to the other. Whether they are Texas-sized or tiny, arid or humid, there's one message he'd like to give all ranchers: Test first, deworm second.

"I'm a proponent of fecal testing before deworming, if possible," he stresses. "Find out what to deworm for and when. The days of treating everything because the grandkids are here that weekend to help work cattle has to change."

SAVINGS POTENTIAL

Like most things, Hairgrove points out the economic benefits first. Fecal testing, he points out, can save you a pile of money.

"We did a random bunch of fecal tests on one ranch and found out they really didn't have an issue with parasites," he says. Had the rancher just dewormed as a normal course of doing business, he would have spent a lot of unnecessary time and money.

Next, there is the challenge of dewormer resistance. Before the 1960s, Hairgrove says producers had to live with worms. Old treatments were ineffective. First came the phenothiazine dewormers, and parasites became resistant to them. Next were the white dewormers, and, once again, resistance developed. Then in the '70s, levamisole hit the market. And, while Hairgrove describes it as "great," he adds parasites also developed resistance to it.

It took until the 1980s for the true wonder drugs of parasite control, the macrocyclic lactones, to come onto the scene. "We went from nothing to magic," Hairgrove says. "Then, we overused or misused them. We dewormed and re-dewormed, then watched as they didn't work as well."

SEEK CLARITY

This is the point where fecal testing comes in. "You don't have to do a fecal test on every cow," Hairgrove explains. "Get a baseline. Then, when you add cattle,



you can test them to make sure you aren't adding parasites to your herd."

For example, if you buy replacement heifers rather than raising your own, or when you buy bulls, Hairgrove recommends, prior to mixing them in with your herd, do a fecal test. Then, deworm with the product or products you normally use. Retest in two weeks to find out if your dewormers worked on the parasites they carry. If your deworming program was not effective on the new cattle, you could introduce resistant parasites into the herd.

Next, have a sit-down conversation with your local vet. "He or she will understand the county, the soil types, the forages," Hairgrove says. "On dry, sandy soil, for example, you probably don't have to worry about liver flukes. But, if you're in a swampy area with predominately clay soil, there might be a problem."

Management also comes into play, he notes. "Parasites only climb up the grass 2 inches. If the grass isn't grazed down to nothing, there may not be a problem."

WORK THE PROCESS

Oakman, Alabama, veterinarian and cattleman Jody Wade agrees with Hairgrove's philosophy. "We have been deworming twice a year, but we may change our thoughts on this. The parasitologists we talked to think we may be deworming too much." ➤

Father and son team Jody Wade (right) and Harold Wade decided to take a step back and rethink their twice-a-year deworming program.



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In the past, Wade and his father, Harold, did fecal egg counts yearly but took a two-year break. “Surprisingly, our cows had really low parasite loads, so we gave it a break.”

While the calves did have a small parasite problem, Wade says, on the whole, what they found out was the macrocyclic lactones they were using were doing what they are supposed to do.

When they next work their 150-cow commercial herd, Wade says they’ll do fecal tests again. If they are low or negative, they’ll skip deworming until spring when they apply a lice preventative.

“If we get a heavy egg count, if we’re not getting 90%-plus kill, we’ll come back in the spring with a macrocyclic lactone and a white dewormer. It is a lot of work to catch the mouths on these old cows, but it has been worth it. That’s the beauty of combination deworming.”

They’ll specifically dose calves and yearling heifers with LongRange when they go out on new grass.

When it comes to getting the fecal samples, Wade recommends either getting your vet or a representative from a pharmaceutical company to do it.



“Boehringer Ingelheim and Merck will do it for you and pay the bill. They are trained to do it,” he says.

While finding a manure pile around a cow sounds simple enough, Wade says the accuracy of fecal samples can be quite variable. Dirt and hay can contaminate samples, and fresh samples are a must. He also says the samples need to be shipped the same day, preferably, and not stored in a refrigerator.

Like Hairgrove, he says there is no need to do the whole herd; he uses 10% as a benchmark.

In the meantime, he says they’ll continue to dose correctly, use the right products, rotate cattle to fresh pastures frequently—and continue to do those fecal tests on a yearly basis. ///

A Few Things One Veterinarian Wants You To Know



Those who’ve met veterinarian

Jody Wade know he isn’t shy. Whether he’s flashing his trademark grin or dispensing advice, he doesn’t hold back. So, what are a few things he wishes he could tell the average cattle producer?

Based on 25 years in private practice in northeast Tennessee followed by his present gig as a cattle veterinarian with Boehringer

Ingelheim, Wade has a few ideas. First, quit guessing cattle weights. Beg, borrow or buy a set of scales.

“There are folks who can guess the weight of a chicken and miss it by 30 pounds,” Wade laughs. “Weight guessing is the worst thing in the world.”

At a recent meeting in an Iowa sale barn, 300 cattle producers and eight veterinarians were asked to guess the weight on three cull cows. “There was a 700-pound variance,” he says.

The Oakman, Alabama, vet says guessing cattle weights is particularly damaging when it comes to administering dewormers. Underdose, and you run the very real risk

of getting a partial kill on parasites, leaving survivors to develop resistance to dewormers. Overdose, and you’re hurting your checking account and, in high enough doses, the animal.

Next, Wade says to leave the paintgun-like products, designed for fly control, on the shelf. “They contain ivermectin and deliver enough for a 600-pound cow. That’s a sublethal dose.”

Lastly, he says to do yourself a favor and precondition your calves.

“So many producers leave so much on the table by not preconditioning,” Wade explains. “Those calves perform so much better if they’ve been weaned, had the proper vaccinations and know what a water trough and feedbunk are. I believe there would be so much less antibiotic use if we’d precondition properly.”

Wade’s father, Harold, says he’s been taking that advice for the last two years, and he’s seen a difference.

After preconditioning steers followed by grazing on ryegrass for 60 days, he and Jody sold them as a group at the Cullman, Alabama, stockyard. They sold for 15 cents a pound over what the other calves sold for on the same day, a benefit he credits to the farm’s preconditioning program.

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China Traits Up



China has opened its doors

to additional biotech traits. The move marks the end of a 1½-year lag in the country's willingness to issue import approvals and comes in time to pose some interesting scenarios for the 2019 planting season.

Newly approved corn and soybean traits are:

- ▶ Enlist E3 soybeans (DAS-44406-6): tolerance to glyphosate, 2,4-D choline and glufosinate herbicides; co-developed by Corteva Agriscience, agriculture division of DowDuPont and MS Technologies.
- ▶ Qrome corn (DP 4114): tolerance to glufosinate herbicides, along with a new molecular stack of current Bt proteins targeting both above- and belowground insects; owned by Corteva Agriscience.
- ▶ MGI soybeans (SYHT0H2): tolerance to mesotrione, glufosinate and isoxaflutole herbicides; developed by Syngenta and Bayer, and now owned by Syngenta and BASF.

Enlist E3 soybeans come a step closer to commercialization in 2019, after China announced its import approval of that trait along with other biotech crop traits.

ENLIST AN OPTION

USDA deregulated the Enlist trait systems in corn, cotton and soybeans in 2014, but, lack of Chinese approval delayed commercialization and allowed dicamba-tolerant technology to gain an advance market foothold.



Follow the latest from Pamela Smith, Crops Technology Editor, by visiting the Production Blogs at dtnpf.com or following her on Twitter: @PamSmithDTN.

Soybeans tolerate 2,4-D better than dicamba. On the flip side, cotton is supersensitive to 2,4-D. “Midwest farmers, especially those with sensitive neighboring crops, are very interested in trying the Enlist soybean trait, and our hope is to get as many of our customers to experience it as possible this season,” says Todd Burrus, Burrus Seed Co., Arenzville, Illinois.

However, at press time, Enlist E3 still did not have import approval in the Republic of the Philippines. Corteva Agriscience is going ahead with a full commercial launch in 2019 in Canada, which does not export a significant amount of soybean meal to the Philippines, says Mike Dillon, Corteva global soybean portfolio lead.

In the U.S., Corteva Agriscience plans to restrict commercial offerings of Enlist E3 until that final approval is in the quiver. First-half 2019 activities will focus on expanding grower experiences with Enlist E3 soybeans through demonstration plots, field technology days and other opportunities.

“It’s not a matter of how much seed is available as it is a logistics issue to get seed treated and moved to market when the approval comes,” Burrus adds. “The earlier that happens in the season, the more seed supply is likely to be available.”

To speed things up, Burrus says his company is currently taking reservations to identify interested accounts. They will have five Enlist E3 varieties ranging from 2.5 to 3.9 relative maturity.

Stine Seed Co. is also accepting customer reservations for planting in the event final approvals are issued, says David Thompson, who oversees marketing and sales for Stine.

“We are still hoping to get some into grower’s hands for planting in 2019,” he says. “In the meantime, we are working hard to secure as many seed acres as we can. Growers who choose to grow seed on contract for Stine can order and take delivery of Enlist E3 seed stock now,” Thompson says.

By the fall, Corteva Agriscience will be readying for a full commercial launch in the U.S., Dillon adds. “For 2020, customers will be able to access significant volumes of this trait from many seed companies,” he says. Maturity ranges for Enlist E3 soybeans will range from Group 0 to Group 5, he adds.

PICK YOUR PLATFORM

This completes the Enlist technology portfolio. In 2018, Enlist cotton reached 1.5 million acres in the Cotton Belt, and Enlist corn fields could be found in Iowa,

Kansas and southern Minnesota. Some farmers planted Enlist E3 soybean acres in 2018, either for seed production or in a closed-loop system in a marketing agreement with Archers Daniel Midland (ADM).

Adding Enlist E3 to the mix makes for an interesting soybean landscape. Dicamba-tolerant RR2 Xtend acres are expected to reach 60 million acres this year. Roundup Ready (RR), LibertyLink (LL), LL-GT27 (which does not yet have an HPPD-based herbicide approved for use) and non-GM soybeans are other seeding options. However, that means every option, with the exception of Xtend, will be sensitive to dicamba.

The newly approved MGI soybeans offering tolerance to mesotrione, glufosinate and isoxaflutole herbicides aren't likely to factor into the planting picture for 2019. They still need import approvals from several important countries. Syngenta is now working with BASF on the trait.

POLISHING QROME

Corn farmers in Kansas, Nebraska, Oklahoma and Texas got a taste of the Qrome trait package in 2018, but, growers can expect a larger helping in the next couple of years now that important approvals are in place.

Qrome contains four Bt traits—Cry1Ab and Cry1F target European corn borer and other aboveground insects, and Cry34Ab1/Cry35Ab1 and mCry3A target Western corn rootworm. The hybrids will also tolerate glyphosate and glufosinate herbicides.

None of these Bt traits are new to the marketplace, but, trait developer Corteva Agriscience says the product allows a “cleaner insertion” of proteins. In layman's terms, it increases the number of hybrids that can express the traits and increases yield in some products.

“This molecular stack allows us to eliminate the yield drag the people have talked about, and it allows us to utilize a much higher percentage of our germplasm with the belowground [Bt proteins],” explains Ryan Myers, U.S. corn category lead for Pioneer, now under the Corteva umbrella.

Qrome hybrids will be available in “introductory quantities” in 2019 in the western U.S., as well as the I-states and the Upper Midwest. Myers says to expect broad introduction in 2020. ///

—Emily Unglesbee contributed to this report.



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INNOVATORS



Welcome to the 2019 Innovations in the Field program. This yearlong endeavor looks at how four inventive farmers evaluate the economic returns of technology and agronomic practices that help boost productivity and profit potential.

Spring Into Action

Indiana farm develops plan to create consistency and boost 2019 soybean yields.

Ryan Robinson needs a good spring, because he and family-owned B&M Farms didn't get the usual field work done last fall. It was such a tough fall that as of mid-January 2019, you could still see unharvested corn and soybean fields in their neighborhood.

B&M got all their crops out, but not without rutting some cornfields. The family typically fall chisels all soybean ground going into corn, and fall sprays corn acres that'll be seeded to soybeans. Corn stubble is also vertically tilled. None of that happened last fall, which means the family is starting from behind this spring.

They hope a favorable weather window opens early this year, when they can spray corn stubble going to

soybeans; otherwise, that herbicide application will have to be done later. "We've also got to level ruts and then get fields chiseled," says Ryan. "We hope we have a spring like 2018 so we can get fields planted on a timely basis."

Except for the wet fall harvest weather, 2018 was one of the best growing seasons ever for B&M's Pendleton, Indiana, farm operation. The growing season helped the farm produce its best-ever average corn yield. Corn yields on many area farms averaged more than 200 bushels per acre.

Soybean Challenge.

As for soybeans, they were acceptable, but "we were a bit disappointed," says Mike Lawyer. Lawyer →

A close-up photograph of a young green plant with several leaves, some of which have small dew drops on them. The plant is growing out of dark, rich soil. The background is blurred, showing more of the soil and some distant foliage.

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owns B&M and is an uncle to brothers Ryan and Nick Robinson.

Year-to-year soybean yield fluctuation is irritating for Lawyer. “In corn, we’ve got a baseline program that consistently produces good yields,” he notes. “Soybeans, on the other hand, have been a real challenge for us to find a baseline, a program that generates consistently good yields.”

In 2018, what looked like a very good soybean crop had late infestations of stink bug and frogeye leaf spot that took 10 or so bushels per acre off the final yield in several untreated fields. Working with Melanie Burk, the farm’s BASF Innovation Specialist, the family is looking at testing several production practices to boost soybean yields. Those include:

► **APPLYING SULFUR:** “We plan to apply sulfur on half our 2019 soybean acres,” says Lawyer. “We’ll use AMS (ammonium sulfate) as it’s a little more economical for us than a liquid program,” he explains. The family ran a strip trial with AMS in 2018 and saw enough good results to

convince them it was a good idea to expand sulfur application acreage in 2019.

► **PLANTING EARLIER:** Planting early may be a stretch this spring with the added field work to make up for last fall. However, weather permitting, the family is looking at planting at least some soybeans in early to mid-April, a good 10 days to two weeks earlier than normal. “Moving the planting date up extends the flowering window and potentially produces a crop that matures before late-season disease and insect pressure,” notes Burk. Lawyer recalls that early mid-group soybeans were their best yielding soybeans the past three years. “This past year,” he adds, “yields on any soybeans planted after May 15 started falling off.” Lawyer also likes the fact that early beans can be harvested earlier spreading out the fall harvest workload.

► **LOWER SEEDING RATE:** The family is also looking at lowering their soybean seeding rate from the 150,000 they’ve been using. “Reducing seeding rate is one thing we can do to lower seed cost,” notes Lawyer. BASF’s Burk recommends they

run trials seeding at 110,000, 130,000 and 150,000 seeds per acre and compare. She also recommends testing different rates with both later-planted and early beans.

► **NEW FUNGICIDE:** The family is already a big believer in making corn and soybean fungicide applications. In 2018, they applied Headline AMP® on corn and Priaxor® on soybeans, with good results. The Priaxor application was made in late July when beans were at R2 to R3 stages.

The benefit of applying fungicides in soybeans in 2018 was especially evident in a fungicide test plot with untreated strips. Both Priaxor and another fungicide



Part of the work planned at B&M by (left to right) Mike Lawyer, Ryan and Nick Robinson this spring includes leveling ruts and chiseling fields.



BASF Innovation Specialist Melanie Burk recommends Lawyer and the Robinson brothers test several production practices to boost 2019 soybean yields.

were applied to the treated strips. “The results were so obvious I could see the difference between the fungicide-treated and the untreated strips out of the side of my eye driving down the road at 50 miles an hour,” notes Ryan Robinson. A late-season infestation of frogeye leaf spot was the main yield-robbing culprit. The untreated soybeans yielded almost 10 bushels per acre less than soybeans treated with a fungicide.

In anticipation of BASF’s new fungicide being approved by the EPA this year, Burk hopes to provide the family with the fungicide for a 2019 trial.

► **VARY SEED TREATMENT:** The family started treating their own soybean seed in 2018. This enabled them to change seed treatment for different planting conditions as seed was sent to the field for planting. The family is looking at possibly setting up trials to compare seed treatments. “We might test the seed treatment ILeVO® to control sudden death syndrome (SDS) and nematodes on some seed,” says Lawyer. Burk recommends targeting ILeVO on soybean varieties susceptible to SDS and in fields where nematode pressure is high.

Treating their soybean seed gives the family several advantages besides being able to tailor seed treatment to conditions. One is economic. Over time they expect to see significant savings over buying

treated seed, considering the amount of soybean seed they plant.

The other is having fresh seed treatment. “Many seed treatments decline in effectiveness over time,” notes Burk. Treated soybeans delivered in February and not planted until May can be more than three months old before being put in the ground. With their own seed treater, Ryan Robinson treats seed right before it’s taken to the field.

The family plants only Liberty®-resistant soybeans. Weed control has not been a problem for them, although as with most growers in the area they have increased their use of residual herbicides to better control waterhemp and other weeds until canopy.

Corn Program That Works.

The family isn’t planning major changes to their 2019 corn production plan if weather cooperates. They’re on a 50-50 corn-soybean crop rotation.

They apply about 200 pounds per acre of nitrogen in a two-pass program using liquid 28. The first pass puts on 11 gallons of liquid 28 with 2 percent sulfur with the planter. They then come back and apply the bulk of the nitrogen, also liquid 28, when corn is 4 to 6 inches tall. “Our soils respond well to this program,” says Lawyer. →



INNOVATIONS IN THE FIELD

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To learn more about the innovative practices these farmers use, check out their details on www.dtn.com/innovations.



Lawyer's goal is to set up B&M to allow for a smooth transition for Ryan and Nick to take over the operation.

"We get good early emergence and plant health, and the crop has all the nitrogen it needs for later in the season."

Lawyer calls in a helicopter to spray a tank mix of Headline AMP fungicide and an insecticide on corn around tasseling. "We've been doing aerial application on corn for about five years," says Lawyer. "The at-tassel time fungicide application was perfect timing in 2018," notes Burk. "It protected the crop from the northern corn leaf blight and gray leaf spot that showed up in the area. However, the biggest benefit from the application last year was plant health," says Burk. "It kept the plant healthy and let it thrive in the reproductive stages."

Equipment and technology-wise, the rutted fields from last fall have Nick Robinson lobbying the family to buy a tracked grain cart. Nick has a vested interest as he's the tillage guy in the operation—the one responsible for rehabbing compaction problems. ●

Farm Succession

A top priority for Mike Lawyer this year is developing a farm succession plan. He and his wife, Lynne, don't have children. Most of the outside work on the farm is handled by Lawyer, an employee Karl Moore, and Lawyer's nephews Ryan and Nick Robinson. Both nephews would like very much to take over the farm together one day, and Mike is looking toward the time when he can slow down.

"Our goal," says Mike, who's in his 60s, "is to set it up so Ryan and Nick can take the operation over at some point." One advantage Mike has is his wife is an attorney who specializes in helping farmers with transition. She also oversees the operations financial accounting. With her expertise, the business has already been structured to ease transition. But more details await attention.

Ryan's and Nick's mother (and Mike's sister), Brenda Robinson, is also very involved in the operation, overseeing recordkeeping to include tracking grain in storage, grain sales, seed, chemicals and insurance.

Ryan Robinson joined the farm operation in 2005 out of high school. An outdoors guy, he runs the combine and does the spraying.

Nick Robinson joined in 2008 after studying mechanics at a community college. He's the lead on tillage and does the spray mixing.

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Be Wary Of Wireworm



FRANK PEARS

If you're out in the field this summer, you might hear a faint “popping” noise coming from your corn. No, it's not the summer heat popping your corn off the cob. Instead, it may be a small beetle pulling the lever on its built-in ejector seat nearby. And, if you happen to spot one of these acrobatic arthropods flipping through the air, you might want to start checking beneath your feet for its less-charismatic offspring, wireworms.

WHAT TO LOOK FOR

There are several species of wireworm that damage crops, but many of the important ones look and act in a similar manner. Adult beetles are brown, oval-shaped insects and are typically ½ inch long. They're called click beetles because if they fall on their backs, they will suddenly flip into the air with an audible “click” as they right themselves. These beetles emerge from the soil in early to mid-spring and are usually the only life stage people will see.

The female click beetle lays her small, white eggs singly in the soil, usually near host plants. The larvae hatch from the eggs after two to four weeks and have a pale-yellow appearance. As they mature, they develop a hard, jointed shell with red-brown coloring, and some species grow to 1.5 inches long. Unlike other crop pests, wireworm larvae may take several years to fully mature, spending all that time underground. Wireworms also pupate underground, and so, this stage is rarely seen.

DAMAGE

Wireworm damage is spotted early in the season with soils that remain damp having a greater likelihood of damage. Local pockets of stunted plants or gaps in rows will appear in areas of wireworm activity. Most of this damage occurs to the seeds, roots and other



Write Scott Williams at Pest Watch, 2204 Lakeshore Dr., Suite 415, Birmingham, AL 35209, or e-mail scott.williams@dtm.com.

belowground portions of the plant. Any aboveground damage may be confused for cutworms. But, unlike cutworms, wireworms do not completely cut through stems, leaving them ragged instead. Fortunately, wireworm activity subsides as warm summer temperatures drive the larvae deeper underground. By the time they return to the surface late in the season, crops are too mature to suffer damage.

MANAGEMENT

Because wireworms take multiple years to mature, fields with past histories of wireworm will likely have them over several seasons. This is especially true of fields previously used as pastureland. Most wireworm-management programs require action before planting in order to be effective, as there are no pesticides listed for wireworm postplanting.

Two to three weeks before planting, set up four bait stations per acre in fields where you suspect wireworms. Bait traps with ½ cup of a 1-to-1 soaked corn-wheat mixture and bury them 6 inches underground, covered with black plastic. After a week, collect the traps and check for wireworms feeding on the seed. If the average number of wireworms per trap exceeds one larva, treatment is necessary. Alternatively, dig up 20 columns of soil measuring 10 inches long x 6 inches wide from different areas of the field and treat if there are more than two larvae per 10 columns.

When possible, planting corn later in the season can avoid the worst damage, as the larvae retreat deeper underground when soil temperatures rise. Replanting affected areas can minimize the financial impact, but, benefits will vary depending on crop and timing. When needed, chemical agents, such as seed treatments (e.g., Lumivia, Poncho and Cruiser) or preplanting broadcast applications (e.g., Baythroid XL, Warrior II), are available.

So, if you see some of your plants getting nibbled on, don't “flip out.” Replant for now and consider your options for next season. The wireworms will still be there and waiting for you. ///

FOR MORE INFORMATION

► Purdue University Wireworm Resources:
tinyurl.com/ychowjxp

► University of Nebraska-Lincoln Wireworm Resources:
tinyurl.com/y7q2yapq

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MDIC-18037 TPF-JAN-LC



Right Place, Right Seedbed

*Precision Planting unveils new depth-control
and furrow-closing products.*

PAMELA SMITH

Precision Planting introduced two new products designed to enhance seed germination, yields and, hopefully, profits.

SmartDepth and FurrowForce are part of the Tremont, Illinois-based company's "intelligent planting system" that aims to give farmers greater control over most row unit functions.

But, producers will have to wait a year to buy the innovations. They will be field-tested worldwide and at Precision Planting's 200-acre research farm this spring.

The company unveiled the products during its recent annual Winter Conference. Thousands of farmers, Precision Planting dealers and industry stakeholders attended the event at the company's headquarters, including at seven simulcast locations.

The seed-depth and furrow-closing systems are designed to operate in conjunction with Precision Planting's 20|20 display and other products.

Precision Planting officials understand spending thousands or tens of thousands of dollars to

retrofit planters when commodity prices are near or below breakeven may be a tough decision for many farmers. But, they believe the investment is worth it.

"There are challenges out there but, also, opportunities," says Justin Kauffman, Precision Planting general manager. "We can complain and blame, wait for someone to fix it or take responsibility for our own success."

Purchasing equipment and technology to improve emergence and stands, and get plants off to the best start possible will pay off, company officials and dealers agree.

"I previously told customers it usually took one year to see a return on investment," says Bryan Porter, a Precision Planting dealer and owner of Porter's Ag Solutions, in Earlham, Iowa. "Now, I generally say two years in today's farm economy."

SMARTDEPTH

Precision Planting studies and research by Cornell, Iowa State and other universities have shown that planting at the right depth

is imperative for optimum seed germination and uniform stands.

The “second knuckle” rule is often used when planting corn, explains Justin McMenamy, who works in research and development for the company. That’s how his great-grandfather set seed depth on the planter in 1925, and, that’s how many farmers do it today.

“There’s a ton that has changed on the farm. But, other things haven’t changed much,” he says.

That could cost farmers yield and money, McMenamy continues. The most common cause for uneven emergence is dry soil. Research shows 30% furrow moisture is optimal for corn at planting, and, that could be above or below the second knuckle. Furrow moisture levels vary among crops. For cotton, it’s 10%.

SmartDepth allows farmers to change planting depth manually or from the cab utilizing the 20/20 display so seeds have proper moisture to germinate. Moisture levels can vary among fields or spots within the same field. Precision Planting’s SmartFirmer reads soil moisture during planting. The seed firmer also measures soil temperature, organic matter and furrow residue.

Pairing SmartDepth with SmartFirmer allows growers to set a moisture target and a planting depth range, such as 1.5 to 3 inches. SmartDepth will adjust seeding depth of the planter to ensure that each seed is placed in adequate moisture for germination.

“One test showed an 18-bushel-per-acre difference [in corn] between 2 to 2.5 inches in depth where the correct moisture was at,” McMenamy says. “That’s what we get really excited about to bring agronomic value.”

Emergence in corn is king, says Steve Hettinger, of Tolono, Illinois. He and his brother, David, farm 7,500 acres and are Precision Planting dealers.

Hettinger hopes to beta test the new products, as he did with SmartFirmer and others, this spring. He’s confident SmartDepth will increase yields using data from SmartFirmer.

“Adding auto depth control so seeds will be planted in good, consistent moisture will get them off to a great, uniform start,” Hettinger says.

Two additional corn plants per one/1,000th of an acre emerged evenly could mean an extra 14 bushels per acre, double the bushels with four plants.

SmartDepth relies on the accuracy of SmartFirmer for optimal seed placement. Brett McArtor, a regional agronomist with the Iowa Soybean Association, says farmers can rely on SmartFirmer readings.

Precision Planting provided about 30 SmartFirmers to the

association’s On-Farm Network last year. It conducts replicated strip trials allowing farmers to test products and practices on their own operations under their own management systems.

“We were looking to make sure the readings were right, and, that’s a definite yes,” McArtor says. “The payback is knowing you’re planting into good moisture.”

A price for SmartDepth hasn’t been set. SmartFirmer costs about \$500 per row. The latest 20/20 display is about \$5,300.

FURROWFORCE

Preserving moisture and seed-to-soil contact while preventing compaction during planting are critical for germination and plant development. Properly closing the furrow does both.

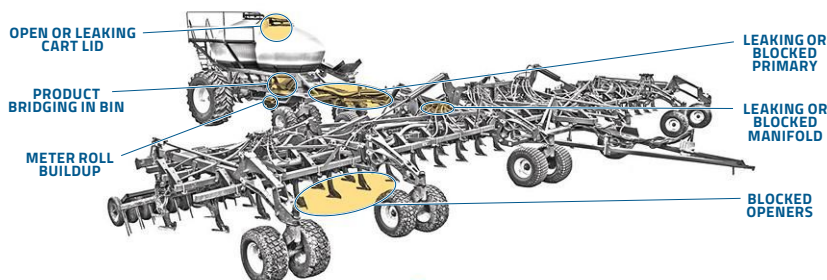
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It's a new closing system that utilizes a sensor to allow automated control of the closing system and adjust downforce, as needed.

The first stage uses notched wheels to close the furrow by shifting soil inward. Next, stitch wheels firm the soil around the seed to the proper density in order to maintain moisture after planting. A closing load sensor links the two stages together, sensing weight carried by the stitch wheels and providing visibility of closing performance on the 20|20 display.

Jason Stoller, a research and development expert for Precision Planting, says FurrowForce deviates from the traditional practice of forcing the soil downward. Instead, it pinches the furrow closed.

"It's adjusting many times per second to prevent slotting and air gaps," Stoller says. During initial testing, he says yield advantages over traditional closing systems in corn typically exceeded 6 bushels per acre.

"Our research has shown this new technology drives increased yields in both tough-to-close and convention-till operations," he adds.

A wet spring caused soil compaction problems during planting last year, Pocahontas, Iowa, farmer Mark Vosika says.

He thinks FurrowForce may prevent that problem. Vosika attended Precision Planting's Winter Conference simulcast location in Ames, Iowa, to learn more about what the company has to offer.

Precision Planting's 20|20 display controls planter functions from the cab and provides data to operators.



MATTHEW WILDE

"I was thinking of modifying my closing system," Vosika says. "With persistent rain, we had some sidewall compaction issues in corn and soybeans, which I want to avoid. But, I would like to see it [FurrowForce] perform a year or two before making the investment."

The Precision Planting customer is happy with other products. Vosika uses the 20|20 display, DeltaForce to provide the right amount of downforce to row units and the vSet seed-metering system to ensure even spacing and avoid skips and multiples.

Vosika says he'll likely upgrade planter technology and equipment in the future along with furrow closing. This could include variable-rate seeding and vDrive, a row-unit motor that replaces the mechanical drive system to simplify how seed and insecticide meters operate.

"We love the performance of everything so far but need to update," Vosika says.

A price for FurrowForce hadn't been determined at press time.

20|20 UPDATES

The 20|20 display is the heart of Precision Planting products, Hettinger contends. It gives the planter operator clear vision and confidence of what is going on in

Bryan Porter, owner of Porter's Ag Solutions, near Earlham, Iowa, readies a 20|20 display for installation.

the seed furrow, and provides data for the company's control systems.

The company recently launched the new 20|20 Connect phone and tablet application. It gives operators the ability to connect their mobile devices to the display to perform frequently used functions like diagnostic and health checks, which can save time.

Precision Planting also recently updated its 20|20 display, including wi-fi connectivity in the cab, through pairing to a mobile hotspot. It enables users to view background satellite imagery behind their planting, harvest or side-dress maps, and update software without a USB stick.

Jason Webster, the company's commercial agronomist, urged growers to challenge the status quo. "With sensing technology, you have the ability to know your soil like you know your equipment," he says. ///

FOR MORE INFORMATION

- Precision Planting:
www.precisionplanting.com
- Follow Matthew on Twitter:
[@progressivWilde](https://twitter.com/progressivWilde)

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Strong Demand Supports Hay Prices

Regional variations in supply and quality are the biggest determinants of value as winter ends.

Kim Summers is not hoping for a repeat of 2018

as she looks to forage production this year. Near-constant rains severely limited the amount of hay she and husband, Mark Brunk, were able to sell from their Pennsylvania farm last season.

“We had over 70 inches of precipitation in 2018,” Summers recalls, noting annual rainfall is usually around 40 inches. “Normally, we get five to six cuttings. Last year, we only got two cuttings.”

Hay prices continue to reflect tight supplies, climbing in light of rising demand—especially this time of the year, right before livestock are able to graze again. According to the National Weather Service (NWS) in State College, Pennsylvania, most of that state saw increased precipitation in 2018. The amount above normal ranged from 11 to 25% in the northern part of the state to 51 to 75% in the south. A couple of counties in this area saw greater than 75% above-normal precipitation, NWS reports.

DTN senior ag meteorologist Bryce Anderson notes the northeastern part of the U.S. “was off the charts” on precipitation last year. Pennsylvania, for instance, was from three to five standard deviations above the 1977–2017 average, which, statistically speaking, is extreme precipitation, he says.



□ *The hay market is seeing strong demand, which is keeping prices high. Regionally, forage prices vary due to differences in supply and availability.* PHOTO COURTESY OF KIM SUMMERS

The forecast this spring calls for more precipitation for both the Northeast and the Corn Belt. A weak El Niño warm-sea surface-temperature pattern was in effect in the Pacific Ocean the first of the year, and, it’s likely to stay through early spring. Anderson says El Niño occurrences usually lead to above-normal precipitation.

EAST COAST SUPPLIES LIMITED

Hay farmer Summers says increased moisture limited her forage production in 2018 to only about 100,000 small square bales. The farm usually is closer to 400,000 bales of production.

In addition to less quantity, quality was an issue. The wet weather did not allow time to dry hay, much less put it up properly. There was never a window of more than a day or two without rain.

Summers, known on social media as the “Hay Lady in PA,” says hay supplies from the East Coast are limited moving into the spring. By January, she had already sold all of her alfalfa hay, as well as orchardgrass hay. She still had some mixed grass hay forage left in stock at press time, but it wasn’t expected to last.

Summers says her family’s hay is sold locally and along the East Coast, from Massachusetts to the Carolinas. They also ship hay, sometimes as far away as Texas, and they produce both small and large square bales.

“Normally, March, April and May are our big months for selling hay, but, this year, it got bumped up some,” she says. “We could sell hay everyday if we had it.”

Prices for hay have risen steadily in recent years as the economics of hay production has forced producers to ask more for their forages. The days of \$2- to \$3-per-bale small square bales are long gone.

The “Pennsylvania Weekly Hay Report” from USDA Ag Market News, in New Holland, reported alfalfa hay prices for southern Pennsylvania the week ending Jan. 11, 2019, at \$205 to \$260 per ton. In that same January 2019 report, alfalfa/grass hay ranged from \$115 to \$460 per ton, and grass hay (timothy/orchard) from \$120 to \$375 per ton.

CORN BELT YIELD BUMPS

Forage production was less affected by increased precipitation in the Corn Belt. Jim Brown, who raises forages near Lebanon, Indiana, says 2018 was a pretty good year in his region for hay. While it was a little wet in the fall, he managed to get five cuttings with decent yields.

“We had higher yields as I started to use some different alfalfa seed, so, I saw about a ton-per-acre

increase in yields in some of my fields,” Brown says.

All of his hay is put up in small square bales and sold to local customers in the area just outside of Indianapolis. With limited cattle numbers in the state, most of his customers own horses or small ruminants. Brown adds demand for forage in his area is strong, and, he had already sold all of his 2018 hay by January 2019. A good economy is key for his forage market, he notes. His customers stop buying hay in a downturn, which last occurred in 2008.

Alfalfa hay in small square bales is selling at around \$6 per bale here, with some reports of as much as \$7 per bale, he says. The per-bale price for which he sold his orchardgrass was \$5.

“Prices are pretty stable in our area,” he explains. “From talking to different folks, there appears to be a decent supply of hay out there.”



Precipitation is one of the key factors affecting hay supplies. How these supply levels vary alter how much cattlemen have to supplement feed.

BECKY MILLS

Farther to the west, hay supplies appear to be slightly better and, thus, prices are lower.

The USDA “Nebraska Hay Summary” for the week ending Jan. 11, 2019, reported alfalfa and grass hay sold fully steady. Prices for alfalfa are ranging from \$72.50

to \$180 per ton. Grass has ranged from \$65 to \$170 per ton.

“If there is a large accumulation of moisture, cattlemen will have to start supplementing feed again, and, that will dwindle supplies of reserve hay,” the report states. “It appears most potential buyers will procure hay on an as-needed basis, not stockpiling large quantities.” ///



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Dial In Dicamba

New rules make for a narrow spray window.

Tyler Young's weed-control strategy this year is a battle plan filled with what-if contingencies.

It's not unusual for the Gibson City, Illinois, farmer to enter the planting season with a complicated playbook of herbicide mixtures. He actually diagrams modes of action on field maps in an attempt to keep resistance issues at bay. He has looked forward to adding new trait technologies to his weed-control lineup, because he understands the necessity to keep weeds confused.

However, Young hesitated in 2018 when it came to deploying dicamba. There was simply too much uncertainty around the new formulations when he was booking seed last year.

"I will be using the Xtend trait this season with the expectation that I will need to spray dicamba," Young says. "But, I say that knowing the window for application will be extremely narrow and staying on label a challenge, and, that I need a backup plan if I don't get sprayed—not to maintain tabletop cleanliness but to try to avoid letting resistant weeds from going to seed."

CHANGES FOR 2019

On Oct. 31, 2018, the United States EPA announced its decision to extend the registration of the dicamba products Engenia, FeXapan and XtendiMax for use in dicamba-tolerant crops (Xtend technology) through Dec. 20, 2020. However, additional label changes were made to an already lengthy set of spray requirements (see "New Dicamba Spray Requirements," on PF-22, for changes from last year).



☐ *The need to cover many acres in a short period of time coupled with specific spray requirements has Tyler Young making plans and backup plans this year.*

University of Tennessee weed scientist Larry Steckel counts nearly two dozen actions that spray applicators now need to carry out to make a legal over-the-top dicamba spray application in a tolerant crop. "We've never seen the complexity of labels like this before," Steckel explains. "But, I also think applicators need to anticipate that any new herbicide registered in the future is likely to come with complex labels."

"If growers and applicators want to retain these products, they need to do everything possible to stay within the regulations," he continues. "They are not merely suggestions. They are the law."

At press time, some states were still eyeing the possibility of enacting even tougher borders, cutoff dates and temperature restrictions with regard to postemergence dicamba applications that go beyond the newly revised federal labels.

RING AROUND THE FIELD

One change that hits home for Young is the new 57-foot omnidirectional buffer requirement that was included on the revised labels. Two of the three counties he farms are on the EPA list where threatened and endangered species, and critical habitat may exist. There were 218 counties in 24 states on that list at press time.

What that means is that in addition to the 110-foot downwind buffer when spraying near sensitive areas, Young (and anyone else spraying in these specific counties) must also leave a 57-foot buffer around all the other sides of that field.

"My mapping just got more complicated," Young says, noting that he started contacting neighbors and learning the location of susceptible fields in early winter. According to EPA, nonsensitive areas may be included in the buffer distance calculations when directly adjacent to treated field edges. That includes roads, paved or gravel surfaces and mowed and/or managed areas adjacent to fields, such as rights-of-way. Planted agricultural fields containing corn, tolerant cotton and tolerant soybeans count, as do areas covered by the footprint of a building, silo or other man-made structure with walls and/or a roof.

That 110-foot downwind buffer is not intended to protect downwind sensitive crops and plants from off-target dicamba exposure, though, says University of Illinois weed specialist Aaron Hager.

"It is only intended to protect other sensitive areas, such as water bodies and endangered species habitat," he adds. "It's a vague 'do not spray' if the wind is blowing toward neighboring sensitive crops or residential areas. It is the responsibility of the applicator to make that decision." ➤



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The new labels also require applicators to consult and record that they have consulted a sensitive-crop registry before spraying. For many, that will mean turning to FieldWatch, a free, national, map-based registry of sensitive crops and beehives available in 21 states.

This year, for the first time, row-crop growers can register non-dicamba-tolerant crops on a new registry called CropCheck (cropcheck.org). All FieldWatch maps include a time-and-date stamp for documentation. An app also allows applicators to view specialty crops and beehives within 10 to 15 miles of their location on their mobile devices. Applicators are still responsible for checking their surroundings for dicamba-sensitive crops and sites that may not be listed.

TANKMIX QUESTIONS

The fact that adding AMS (ammonium sulfate) or UAN (urea-ammonium nitrate) to the spray solution can increase dicamba volatility twentyfold has been a key point in applicator dicamba training this winter. Now, weed scientists are finding strong evidence that glyphosate in the tank is also altering the spray pH and possibility causing the mixture to move. The data was strong enough to cause EPA to issue a warning on the new dicamba label.

"I think, as a researcher, we all knew that Roundup [glyphosate] would lower the pH some. My surprise is how much it is really reducing it," says Tom Mueller, the University of Tennessee weed scientist working on this project.

"We have an extensive data set from field and lab studies that shows that XtendiMax and Engenia alone are really relatively low in volatility. But, when we add Roundup to the tank, it is lowering the pH below the 5.0 stipulated on the label—and, it is causing more emissions," Mueller says.

"Right now, we have no buffer or additive to change that," he adds. Mueller understands farmers will not like the thought of two separate applications if they desire to use both herbicides.

"But, I think they need to consider it, particularly if they are in areas where they know sensitive crops exist," he says.

WAR ON WATERHEMP

Young's big battle is waterhemp, which has shown the ability to resist multiple herbicides. He will be leaning on a three-mode preemergence product this spring and praying for rain to activate.

"Waterhemp can germinate within a day of tillage and quickly grow 4 inches or more in height," he says.

"At that stage, I can only make an aggressively growing, resistant weed mad with Flexstar or Prefix.



Dicamba gives me a shot at control if I can work within the spray window and still get the weed early and small," he says.

Residual herbicides and 15-inch-row soybeans will help, but, a fallback plan is needed, he figures. "I hate to say it, but, we're also looking for tractors that will fit a row cultivator—especially for those edges that have spoiled up in weed seed," he says. ///

New Dicamba Spray Requirements*

- ▶ Only certified applicators may apply or mix dicamba.
- ▶ Soybean application allowed up to 45 days after planting or to R-1 growth stage, whichever comes first.
- ▶ Cotton application allowed up to 60 days after planting and limited to two over-the-top applications.
- ▶ Applications allowed from one hour after sunrise to two hours before sunset.
- ▶ In counties where endangered species may exist, the applicators must leave a 57-foot buffer around remaining sides of field. A 110-foot downwind buffer remains for all fields adjoining sensitive areas.
- ▶ Test spray solution to make sure it remains above pH of 5.0.
- ▶ Records must be created within 72 hours of application and now include target crop-planting date, the buffer distance calculation and a record of the time during the application that spraying was stopped due to shifting wind directions or wind speeds.
- ▶ Applicators must check registry such as driftwatch.org for the presence of nearby sensitive crops or sites.

**List is of label changes for 2018–2020. Check for additional federal and state requirements and changes prior to spray application.*



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A Growing Rural Crisis

Death rates from opioid overdoses climb where health-care infrastructure wanes.

Communities across the country are looking for hopeful approaches to combat the scourge of opioid addiction.

Putting the problem back in the jar—or bottle—may be impossible. Victims often are faceless and nameless in a national tragedy that buries families in stigma.

Opioid overdose victims can be any family member, friend, neighbor or coworker of any generation, in urban as well as rural America. Families are losing loved ones to a crisis still on the rise nationally.

Columbus, Indiana, farmer Randy Hedrick could have been just another grim statistic. Instead, he went from taking 400 milligrams of opioid painkillers a day to zero.

“My dad, as I was growing up in the ‘60s and ‘70s, he was addicted to painkillers,” Hedrick says. “I fell right into the same trap. It is just off-the-wall bad right now. We’ve opened a Pandora’s box, and, we can’t get out.”

RURAL BATTLEFRONT

Rural America is a crucial battlefield where the crisis is growing. At the same time, the agriculture-based economy continues to struggle and lacks the

resources to support needed health-care infrastructure improvements and growth.

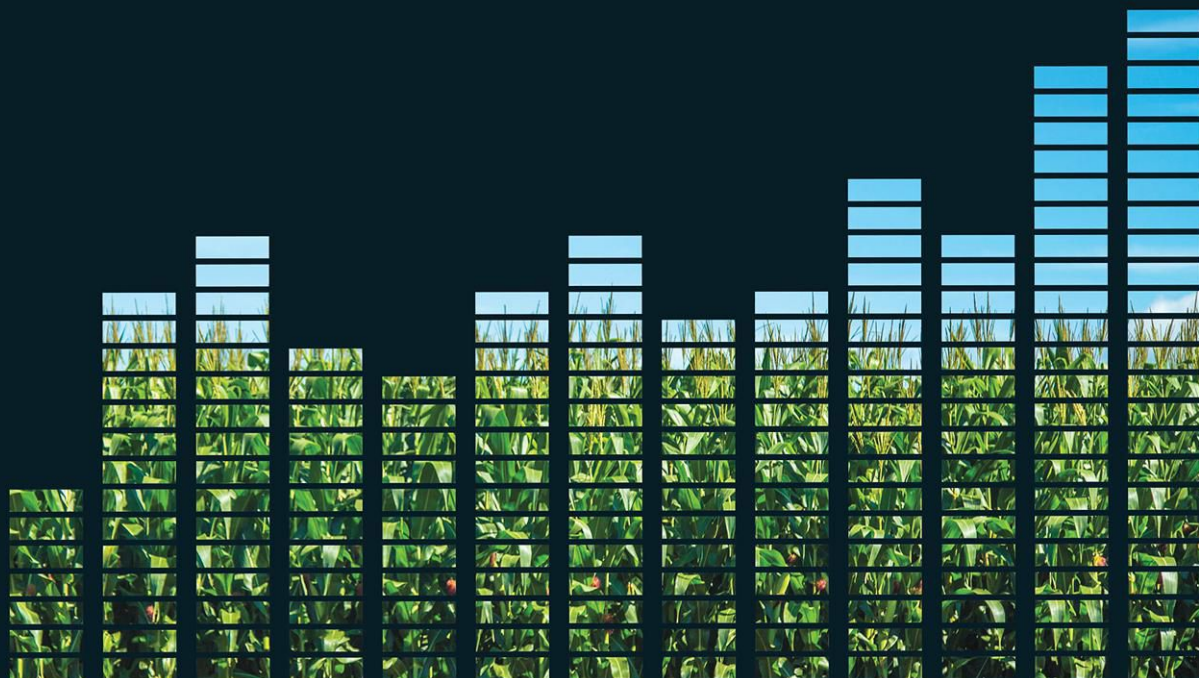
Agriculture-based rural America is the center of a perfect opioid storm—the risk of injury and need for pain relief may be greater while working on farms than in any other occupation.

In 1999, the drug-overdose death rate for urban areas was higher than in rural areas, at 6.4 per 100,000 residents compared to 4 in rural areas, according to the Centers for Disease Control and Prevention (CDC). By 2015, rural overdose death rate per 100,000 residents spiked to 17 compared to the urban rate of 16.2.

From 2000 to 2014, there was a 200% increase nationally in the rate of overdose deaths involving opioid pain relievers and heroin.

The most commonly prescribed opioids are methadone, oxycodone and hydrocodone. Prescription drugs accounted for 40% of opioid overdose deaths in 2016, according to the CDC. Addiction to prescription opioids is the biggest risk factor for starting illicit heroin.

The recent rise of the synthetic opioid fentanyl has created a whole host of new and more dangerous challenges. Fentanyl is 50 times more potent than heroin and 100 times stronger than morphine: It only takes 3 milligrams to be lethal. The CDC says death rates from ➤



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fentanyl doubled from 2015 to 2016, when more than 19,000 people died.

“It took a while for policymakers to think about it in the right way,” says Dr. Andrew Kolodny, codirector of the Opioid Policy Research Collaborative at Brandeis University, in Waltham, Massachusetts. “There is a flurry of activity across the country, all trying to tackle the problem through public-health interventions. The efforts are new, so, we don’t yet have a good evidence base for what works and doesn’t work.”

A FARMER’S JOURNEY

There was a dry creek bed near Randy Hedrick’s Columbus, Indiana, farm.

In his mind’s eye, he still sees his father lying dead, trapped underneath an overturned four-wheeler in loamy soil. Addiction to opioid painkillers played a role.

The choice was simple: Hedrick could end his addiction, or he could end up like his father.

The younger Hedrick became addicted after using opioids to deal with injuries on the farm.

When his father died, Hedrick had been using opioids himself for nearly 20 years. During the throes of addiction, Hedrick says he was unable to think clearly because of a perpetual fog.

Early in his recovery fight, Hedrick stayed in a rehab clinic for a week and attended support meetings. He fought withdrawal symptoms, which typically include nausea, muscle cramping, anxiety and depression.

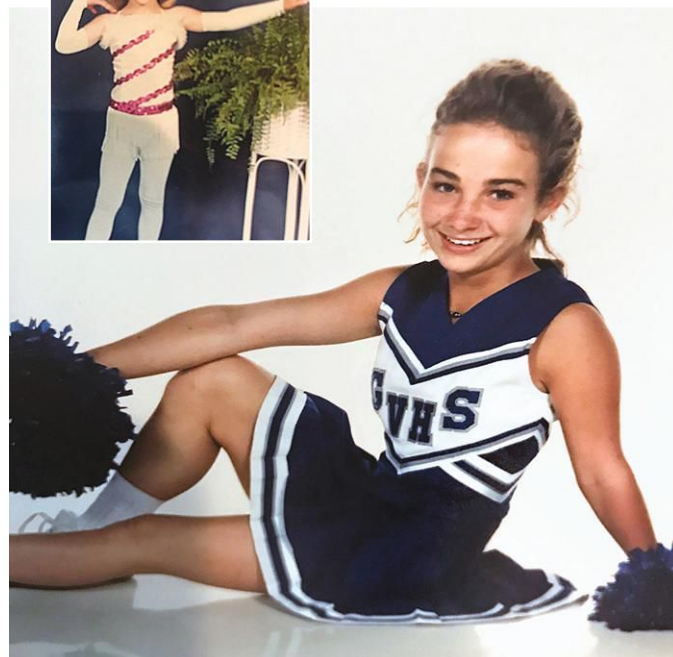
“I started asking hard questions,” he says. “It helped me to see how I got involved in drugs. One thing I learned when I got clean, I don’t want any more secrets.”

Within months following his father’s death, Hedrick was clean.

FAMILY AT A LOSS

Gunnison, Utah, farmers Richard and Annette Dyreng were vacationing in Texas on Jan. 11, 2017, when the phone rang.

A solemn-voiced police officer says their daughter, Cami Dyreng, 39—a former scholar, college marching band member, high school cheerleader and mother of three boys—was found dead from a heroin overdose back home.



For the first time in more than a year, Richard and Annette say Cami’s spirits were so low she sat out the family vacation at home.

Cami dabbled in heroin again less than one month before she died.

Family photos portray the life of a young, vibrant girl.

There is a young woman posing barefoot in her white wedding dress; a grade-schooler wearing a red plaid dress and two red and white bows in her hair; a smiling little girl standing still with arms stretched out wearing a white dancing suit; an energetic teenager in her blue and white cheerleading outfit and pom-poms in each hand; and a young mother holding her baby lovingly to her chest.

“She knew if she used heroin again, she would die,” Annette says, choking back tears. “She was trying to die. I think it was just her mental health. It was the emotional battle. Where her life was, it was depressing. She just had no hope. She just couldn’t see a bright future.”

Cami’s parents still had hope.

In the year leading to Cami’s death, she appeared to be on the road to recovery, they say, and was more like the cheerful girl of her youth.

“The last 16 months of her life, we had great times with her,” Richard says softly.

The Dyrengs believe a lack of opportunity near their town, 130 miles south of Salt Lake City, was ultimately the missing piece in their daughter’s rocky road to health.

Even with drug counseling and other health services available in the Gunnison area, along with loving family ►

As a young girl, Cami Dyreng was energetic, intelligent and ambitious. She had a vision of what could have been, but, drugs took over her life.

PHOTOS: COURTESY OF RICHARD AND ANNETTE DYRENG

Indiana farmer Randy Hedrick gave up using opioid painkillers after a 20-year addiction, turning to his faith for answers.

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and friends around to help, Cami struggled to find a new path.

Following a series of arrests on drug charges, her application for admission to Utah State University to study psychology was rejected. Everyone in her hometown knew her history—she couldn't find job opportunities.

"In her death, tons of people showed up to pay tribute," Richard says. "We stood in line for three hours shaking hands. All the help in the world would not help if communities are not willing to make a change."

THE SPREAD OF OPIOIDS

While opioids in the form of heroin are sold illegally, opioid painkillers are widely available legally and often easily accessible in medicine cabinets across the country.

Rising rates of addiction coincide with a huge expansion in the number of opioid prescriptions in the past 20 years.

A July 2017 Centers for Disease Control and Prevention study reported opioids prescribed in the United States actually peaked in 2010, at 782 morphine milligram equivalents per capita. That number decreased to 640 in 2015, though the reasons for this are unclear.

"Despite significant decreases, the amount of opioids prescribed in 2015 remained approximately three times as high as in 1999 and varied substantially across the country," the study says.

The U.S. Drug Enforcement Agency holds an annual national drug take-back day. Since May 2016, the event at more than 5,000 locations across the country has collected about 5,484 tons of prescription medications. It is unclear how much of that is opioids.

Amy Haskins, project director of the Jackson County Anti-Drug Coalition, public health educator and sanitarian at the Jackson County Health Department in West Virginia, says because young kids often find and use opioid painkillers from relatives' medicine cabinets, antidrug efforts focus heavily on educating kids on dangers as early as elementary school.

"With kids, we need to tell them, 'Don't take anything that doesn't belong to you,'" she says.

"A lot of these kids had access to meds, and, it was leftovers in the house, and, parents are not counting meds. Parents: Tell them to never go into a medicine cabinet. Nobody wants their kids to be the next one. We talk to seniors [elderly] and tell them to switch locations ►



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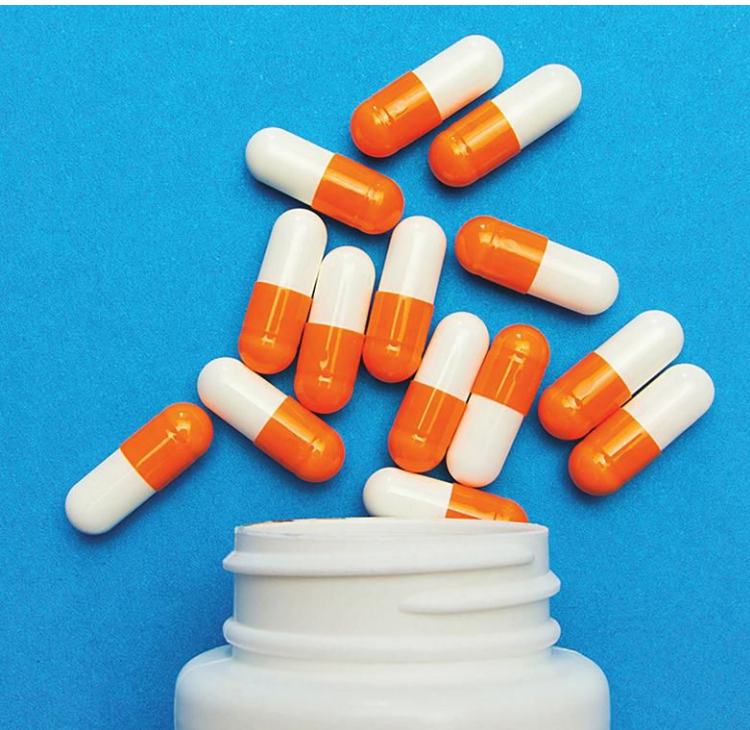
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for their medicines, put them in a new place. Don't put them in obvious places."

RURAL TREATMENT LACKING

Nationally, 65% of rural counties do not have a practicing psychiatrist, 47% lack a psychologist and 81% lack a psychiatric nurse practitioner, according to the National Rural Health Association.

Gage Stermensky, director of behavioral health at Community Action Partnership of Western Nebraska, in Gering, says there's no easy answer to address doctor shortages in rural areas.

"One of the biggest challenges is mostly in MDs [medical doctors], people in psychiatry," he says.

Nebraska has the third worst need-to-capacity ratio for opioid addiction in the country, at 6-to-1, behind Arkansas and South Dakota, at 7-to-1, according to a 2016 University of Nebraska-Lincoln study.

On Oct. 3, the U.S. House of Representatives and the U.S. Senate both passed the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act. The measure includes dozens of bills aimed at various aspects of the crisis. The legislation was signed into law by the president on Oct. 24, 2018.

ON THE FRONT LINES

Opioid addiction has become an everyday way of life in Morehead City, North Carolina, where One Harbor Church pastor, Donnie Griggs, is on the front lines in his rural town of 9,000.

Griggs' brother, Curtis, was addicted to drugs starting at age 12. By 17, he was hooked on Xanax and oxycodone. From there, he started using heroin daily. The town is surrounded by small towns of 100 or fewer residents—all of them facing the opioid challenge.

Griggs comes to the rescue with ambulances on overdose emergencies. He has seen friends die from suicide brought on by addiction.

"It's affecting every facet of society," Griggs says. "I'm in mansions, and I'm in trailer parks. It acts like a bomb and not a bullet. We can't get foster parents as hard as we try. It is in the school system; kids are trading drugs.

"I'm not the savior for this little town. God can set them free. I can't impose myself on people." ///

Actionable Insights

Studies show 90% of all teens who abuse

pharmaceutical drugs obtain them from home medicine cabinets or friends' medicine cabinets. One in four teenagers has taken a prescription drug not prescribed for them. That's why it is important to store personal prescriptions safely.

If you no longer use but hold onto painkillers, find a local take-back program to dispose of them. If programs aren't available, lock prescription drugs away, and change storage locations every couple of months.

One of the major barriers to overcoming addiction is the stigma attached to drug users. Often, stigma prevents people in need of help from coming forward for fear of public shame.

Working hard to foster a sense of community and acceptance in rural areas of people fighting addiction can be the difference between living and dying.

In many cases, drug-overdose survivors are looking for second chances. Criminal history can make it difficult for recovering addicts to find jobs. So, employer willingness to provide opportunities can make a difference.

Telemedicine can be a valuable tool in combating opioid addiction, but, many rural areas lack access to broadband internet.

Where broadband is available, schools can play an important role in providing medical services to families at schools via telemedicine. In some rural areas, families have to travel hundreds of miles to see doctors.

Teachers and school staff often are on the front lines. So, schools can train school employees to identify substance abuse in students.

Farm Carbon AND BIOFUELS

Focus of carbon sequestration and farming are more practical than global climate talks.

Ohio corn farmer Fred Yoder returned recently from a frustrating week in Poland listening to foreign ministers and others talk about what they think farmers globally must do to address climate change.

As chairman of the North America Climate Smart Agriculture Alliance, Yoder took part in a workshop as part of the 24th Conference of the Parties to the United Nations, described in climate talks as “COP24.”

Yoder had expected a discussion about the pillars of climate-smart agriculture, which highlight increasing production sustainably, adaptation and resilience, and reducing greenhouse gas emissions. But, the talks took off in a different direction, and, Yoder was taken aback by views that modern agriculture is broken and needs to be radically altered.

“During the workshop, they had a huge room with all of these different countries miked up, and, I couldn’t believe how many people came with positions not to our liking,” Yoder says. “It’s very anti animal protein, and, they want to go to a plant-based diet. They had an agenda, and, that’s the problem. It’s not so much just about reducing greenhouse gases but being anti animal agriculture.”

Yoder finally got his chance to talk after hearing from people who want everyone to stop raising meat, champion only grass-fed production or overhaul production of commodity crops. Talk arose about reducing meat consumption 40% or putting a tax on meat globally.

First, Yoder notes how few actual farmers were involved in the 24th Conference of the Parties on climate change.

“I was kind of off-the-cuff, but, whatever program they come up with, if they don’t have farmers, whatever they come up with is dead in the water,” Yoder says. “So, I’m thinking to myself, if we hadn’t been there, silence is considered approval. The people supportive of mainstream agriculture were silent except for us.”

Yoder questions whether the COP24 in Poland was the best way for him to spend his time, especially when

he still had some corn in the field, because Ohio had been extraordinarily wet during the late fall. But, Yoder believes U.S. farmers need a seat at the table in the global debate over agriculture and climate change. He’s just not sure the talks are that practical.

“It just galled me they had the view that industrial agriculture is the root of all of our problems,” he says. “It’s simply not fair. I don’t farm anything like I did 20 years ago. I’m more efficient and sustainable than I’ve ever been.”

Yoder says farmers might one day get a price for the value of carbon and a scientific measure for what can be sequestered or reduced. “I’m still looking for the pony in the pile,” he says.



JIM PATRICO

CARBON COUNTING

While Yoder might be frustrated about the international politics of food and climate change, more attention is being paid right now to the role of farm practices in reducing the carbon footprint of biofuels.

Members of the South Dakota Corn Growers Association (SDCGA) have been researching just how much carbon farmers in the Northern Plains can store while growing corn. The effort began roughly a decade ago

as SDCGA’s leadership began to build the case that ethanol can show a lower carbon footprint because of practices on the farm. Because California’s Low Carbon Fuel Standard (LCFS) scores greater value to fuels with lower carbon values, there are potentially hundreds of millions of dollars at stake for ethanol plants that can demonstrate lower carbon footprints.

“If you look at carbon, the supply chain and the end users, everyone is looking at this,” says Lisa Richardson, executive director of the South Dakota Corn Growers Association. “From our perspective, we’re trying to figure out the numbers and what the carbon footprint in South Dakota looks like.”

Currently, California’s LCFS does not take into account farm practices to reduce the carbon footprint ➤

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of ethanol, but, that door could swing open for farmers in the future. So, the South Dakota Corn Growers got a peer-reviewed study, later reviewed by the Union of Concerned Scientists, looking at corn production practices and carbon storage.

“We have to figure out how to measure carbon life cycles on the farms,” Richardson says. “There is significant work going on in this space. I know, for us, this is one of our biggest research efforts, because we believe there is an opportunity.”

The American Coalition for Ethanol produced a white paper recently on properly measuring the low-carbon benefits of corn ethanol. The paper analyzed life cycle modeling to ideally build more consensus for expanding corn-based ethanol production and use beyond the obligations of the Renewable Fuel Standard.

The report cites several recent lab studies seeking to encourage the Department of Energy, EPA and the California Air Resources Board (CARB) to update data on emissions for corn and ethanol production. The studies include data on nitrous oxide emissions, nitrogen retention, input use and corn transportation.

South Dakota’s water balance helps, because the state doesn’t have excessive runoff that affects the nitrogen balance, Richardson explains. Practices such as no-till and ridge-till production in the state grew out of ways to help address water-pressure issues.

“We don’t have excess water; we’re usually short on water, so, we use all of the nitrogen,” she says. “It doesn’t leave, typically. There are some situations, but, typically, it doesn’t leave. We are storing carbon even in conventional till because of all the organic matter we’re putting back on the field.”

This is a unique opportunity for the western Corn Belt, Richardson says. “We want to lead this effort,” she continues, pointing to ways linking low-carbon farm production to precision agriculture. South Dakota State University recently announced the creation of a precision agricultural center and major at the university.

Originally, a small South Dakota ethanol plant made an application to the California Air Resources Board to look at the production practices of farmers delivering to the ethanol plant. The data was there, but, it was just one small ethanol plant involved, and, the effort got lost in the protocol and the time it would take by CARB to approve such a low-carbon pathway. The research, though, continues.

“I do believe there is an opportunity for corn-based ethanol because of the farmers’ production practices that we can get into that market at a much higher blend level,” Richardson says.

California has a cap-and-trade program, which has given carbon-credit pathways for rice growers in parts of the country, as well as wheat growers in the northwest



CHRIS CLAYTON

Keith Alverson and his dad, Ron, had their South Dakota farm used as a test site to measure carbon sequestration for corn production. They found they had sequestered enough carbon in the soil to show the farm was not only carbon neutral but sequestered enough carbon that equated to offsetting the emissions of 370 cars.

Palouse region. More groups are looking at the cap-and-trade pathway, but, the value for corn farmers is in the liquid-fuel market, Richardson says.

“A \$100 carbon price [per ton] is worth about \$80 an acre in South Dakota,” she says. “That would mean part of the benefit goes to the ethanol plant, and, part of the benefit goes to the farmer.”

Such work would further create opportunities for farmers if other states also created their own low-carbon fuel standards.

MEASURING SEQUESTRATION BENEFITS

As part of the South Dakota carbon-sequestration study, the group Applied Ecological Services was hired to study carbon sequestration on the farm of Ron and Keith Alverson, near Chester, South Dakota.

Applied Ecological Services found that the Alversons’ farm has been storing about 1.5 tons of carbon dioxide per acre going back over the past 32 years. Not only is the farm operation carbon neutral, but, it’s carbon negative. The Alverson farm sequesters enough carbon dioxide to offset all greenhouse gases tied to the farm, along with the emissions from 370 cars.

The Alversons use a ridge-till system that creates high seedbeds, making it more high and dry when spring weather is still cool and moist. The practice makes it effective for growing high-residue continuous corn. The organic matter in the soil has grown from an average of 3.2% to 4.5 to 5% levels.

The National Corn Growers Association has 140 farms in its Soil Health Partnership. It has a USDA Conservation Innovation Grant looking at farm practices that sequester carbon. ///



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Lori Culler is founder of AgHires (ag hires.com), a national employment recruiting service and online ag job board. Email her at lori@ag hires.com.

“How do I get my employees to listen?” It’s

an interesting request I hear often at farm shows and conferences. Many are fed up with employees not listening to their clearly stated steps. I even had one participant say, “I literally give each step a number, and they still miss steps.”

What drives an employee’s behavior at work, including his or her ability to listen, stems from how well you perform as a leader. There are extreme cases where employees just can’t be saved, but, more often, it’s good employees behaving unfavorably because we’ve created an environment that encourages the exact behavior we don’t want.

There are ways to improve employees’ listening and understanding of the tasks they are given.

Explaining the “why” behind your requests and sharing knowledge behind decisions will help improve listening. You can also maximize the use of technology to ensure everyone is on the same page, such as sending out instructions in writing, to help keep things in check.

But, even if you get really good at having employees listen to every step, is that really what you want?



PROMOTE INITIATIVE

If you are the only “thinker” on the team, and, all direction, decisions and tasks come from you, eventually, you will get what you created: a team of employees that simply has stopped thinking. Employees will react to the environment you create as an owner. If you are a “just do it how I say” manager, you will get a team that only does what you say. The challenge in farming is there are so many factors that can change in a moment, and that should trigger a change in direction. But, if you create the wrong environment, employees will keep charging ahead to get A, B and C done as you said, sometimes to the detriment of the farm.

These are competitive times in agriculture, and, if you are the only leader on the team, you’ll limit how far you can take your business. One person can only be in one place, only do so much, only think of so much. To expand your limits, you need to build a team of leaders.

DEVELOP AUTONOMY

The phrase “building leaders” is often interpreted as “growing managers,” and many farmers are concerned they don’t have a lot of spots for managers on their farms. But, developing leaders on your team simply means developing individuals who take ownership of their tasks and are an impactful contributor to the company. They take that extra step. I have leaders on my team who don’t manage anyone. They manage their department, think outside the box and are passionate. Their leadership over their responsibilities is not only an infectious attitude for other employees but also pushes our company to new heights.

On the farm, when you build a team of leaders, it’s a ripple effect that bleeds through the whole farm. Fewer mistakes are made because employees are taking more care and stopping to think before they act. Employee longevity increases because they are engaged at work and enjoy showing up each day, and they will be less likely to look at or take another job. You will have employees helping you solve problems to daily challenges and suggesting new approaches.

SEEK INPUT

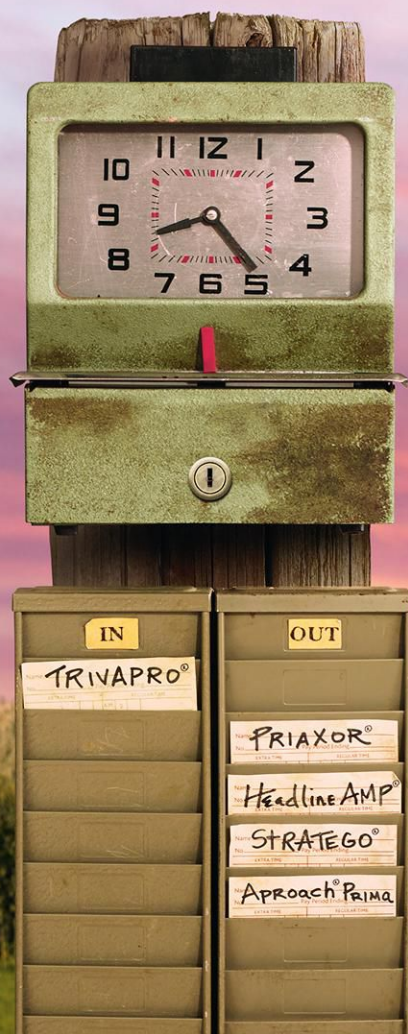
The first step to developing a team of leaders is to listen. Ask employees what hinders them in their roles. Ask their opinion on how to approach a problem. Ask them for ways to improve communication during planting. You will need to be the one leading the charge to get them engaged. It doesn’t mean you need to take every idea, but, go with one or two ideas, and you will start to see more come your way without having to tug them out.

Give a little power to your employees by creating self-driven teams in areas you would like to see improved, whether it’s a group of employees who focus on safety on the farm, or, you want them to rearrange the shop. Giving your team authority in certain areas will have them fully buy in to seeing it through.

How do we get them to start listening? We start listening and engaging with employees in different ways than we have in the past. The real question isn’t how do we fix them, but, how do we fix us, the employers, that drives better results. ///

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Ethanol Plant Expansion

Brazil is building a second corn-based facility in its effort to grow fuel supplies.

FS Bioenergia, a joint venture between Iowa-based Summit Agricultural Group and the Brazilian company Tapajós Participações, recently launched construction on its second corn-based ethanol plant in Sorriso, Brazil.

The total plant investment was announced at \$267.5 million. It is expected to be completed in time to sell ethanol to market by February 2020. According to the company, its operations are benefiting from the country's RenovaBio program that pays biofuels producers for reducing carbon emissions. The first phase of the construction includes a production capacity of about 70 million gallons per year using about 24.8 million bushels of corn.

A yet-to-be-announced second phase of construction is expected to double production capacity at the new plant, requiring an additional investment of more than \$93 million.

“Our idea to anticipate construction with a first phase is to access the market early,” says FS Bioenergia chief executive officer Rafael Abud. “Building the entire project at one time would only take a longer time.”

MOUNTING PRODUCTION

Once completed, the new ethanol plant in Mato Grosso will add production capacity to a state that already produces more biofuel than it consumes. The company reports it currently sells ethanol to the north region of Mato Grosso and is expected to sell new volumes to the underserved Pará.

“As this mill will start operating at an off-season corn season in Mato Grosso, FS Bioenergia is closing grain purchase contracts that will be harvested next winter and will be stocked until the unit begins operations,” the company reports.

Abud says the company's goal is to help corn producers become more productive. Currently, Mato Grosso's corn yield is around 100 sacks per hectare (2.5 acres). “The more technical ones already produce 150 sacks per hectare, but, the United States already produces near 200 sacks per hectare,” he says.

SOURCE MATERIALS

To expand agriculture production, the company plans to reserve area on its land in Sorriso for experimental maize crops and demonstrations of new technologies.

The new plant also will depend on the supply of eucalyptus chip to fuel the cogeneration of energy that



A joint venture in Brazil cofounded by an Iowa-based agriculture company has started construction on its second corn-based ethanol plant in Mato Grosso.

PHOTO COURTESY OF SUMMIT AGRICULTURAL GROUP

supplies the unit. The company is partnering with producers in the midwest of Mato Grosso to plant about 74,000 acres of eucalyptus, which will be able to supply its two plants in the state. So far, partnerships have been made to plant more than 12,300 acres, many of which have been planted.

In January 2018, FS Bioenergia announced plans to double capacity at its plant in Lucas do Rio Verde, Mato Grosso, from 60 million gallons to 140 million gallons. FS Bioenergia is expected to process more than 50 million bushels of corn and produce more than 14,000 tons of corn oil and 400,000 tons of feed rations for Brazil's livestock industry as a result of the expansion.

The company says the expansion is possible because of increased corn production through double-cropping, as corn production has increased five times in Mato Grosso in the past decade. In addition, Brazil's RenovaBio program calls for a doubling of the country's use of renewable fuels by 2030.

Production at the plant launched just prior to the Brazilian government levying a 20% tariff on ethanol imports from the United States.

Summit Agricultural Group was founded by Bruce Rastetter, cofounder of Hawkeye Renewables. In a September 2014 interview with DTN/*Progressive Farmer* about the first Brazilian project, he said farmers in the region were looking to add value to their corn crop, and the market for dried distillers grains was growing as more cattle became part of the mix. ///

Ag Labor Shortages

American Farm Bureau's 100th annual meeting emphasized a need for solutions to a dwindling workforce.

Agriculture faces a lot of issues moving into 2019, but none so serious as farm labor.

"It's the biggest issue that our farmers face across America," Zippy Duvall told reporters after his speech at American Farm Bureau Federation's centennial meeting recently in New Orleans.

Duvall says he recognizes the difficulty of finding a solution that involves foreign guest workers while the federal government, at the time of the meeting, was shut down in a fight over a southern border wall. He hopes there is an opportunity to work on agricultural labor issues and, ideally, boost the guest-worker program for agriculture but notes the divided Congress and heated debate going on right now over the wall will make finding a solution challenging.

"I know over the last several years when I would come to the Hill to talk about immigration, everybody's speech back to me would be, 'Well, we can't consider immigration or ag labor until we secure the border.' Hopefully, we are on the path to securing that border, and we can have some serious conversations about solving some of our problems," Duvall says.

A PERFECT STORM

Duvall adds 2018 was a perfect storm for farmers with a combination of natural disasters, low prices, a trade war, labor shortages, lower incomes and rising debt. He recalls an emotional conversation with a dairy farmer who had to put his farm up for sale last year.

"Farmers are doing some bad things to themselves across the country because they don't know a way out," Duvall believes.

There were positive notes last year, he adds. In what he says was a productive policy year for farmers, tax reform went into effect, doubling the estate tax exemption for producers.

In addition, the farm bill was passed, with Farm Bureau organizing its efforts through more state-to-state communications so everyone understands what each state needs out of the legislation. Duvall notes the bill improves risk-management tools, protects crop insurance

"as the cornerstone" for the farmer safety net and provides more funding for trade and rural development, as well as more programs for beginning farmers.

"Just about everything in those recommendations came out in this farm bill," Duvall says.

A SEAT AT THE TABLE

With President Donald Trump giving a keynote address at the meeting, Duvall says the administration "gives us a seat at the table." With that, Farm Bureau needs to work to complete the EPA Waters of the U.S. Rule in 2019, as well as get Congress to approve the new United States-Mexico-Canada Agreement (USMCA).

"It's our time now. We've got to get it through Congress. This president can't do it by himself," Duvall stresses.



CHRIS CLAYTON

Trump and some of his advisers have suggested withdrawing from the North American Free Trade Agreement (NAFTA) as a way to spur Congress to vote on the USMCA. Duvall says he has concerns about the president taking such action.

Zippy Duvall, president of the American Farm Bureau Federation, spoke at the group's 100th annual meeting recently held in New Orleans. Duvall talked about Farm Bureau's history of becoming a united voice for agriculture when it comes to issues affecting agriculture.

"If he withdraws from NAFTA, it would be crushing for American agriculture, so, we're going to be trying to encourage him not to do that," Duvall says. "I know it's probably a leverage tool for him, but, we're going to do everything in our power with our grassroots and through our state farm bureaus to encourage or educate Congress as to what this treaty is going to do for us" ➤

moving forward, because it's a very, very important treaty that we need to continue before he does pull us out of NAFTA."

Sen. Jerry Moran, R-Kan., also believes it would be a bad idea for the president to withdraw from NAFTA, arguing it would give more leverage to free-trade opponents who want to reopen the USMCA negotiations.

"It's a bad outcome for Kansas agriculture and U.S. agriculture," Moran says.

Also, on the trade front, Duvall stresses the U.S. needs allies to tackle China. He says they will encourage the president to work with other countries on a solution for trade problems caused by China.

"China's just not mistreating us, they are mistreating a lot of other players in the world, and I think they are fed up, too," Duvall says. "I think there are some other countries out there that would like to help us."

Agricultural leaders such as Zippy Duvall hope there will be new opportunities to work on industry labor issues and, ultimately, enhance the guest work program for ag. ▢

Duvall adds the major trade negotiations U.S. farmers want to see worked on are the agreements with Japan, the European Union and the United Kingdom.

"It's our time now. We've got to get it through Congress. This president can't do it by himself."

—Zippy Duvall

SHUTDOWN EFFECT

When President Trump spoke to Farm Bureau members, he came looking for a friendly crowd to help him in the battle with Congress over the partial government shutdown, which was in full swing at the time of the meeting. Duvall says farmers were being affected by the need for disaster loans, trade mitigation payments and getting the new farm bill implemented. The shutdown impacted all.

Duvall says while Farm Bureau supports border security, the group's policy doesn't say what a secure border should look like. It is silent on a wall.

"We think we need the protection, and, when people come across, we need to hold them accountable,"

Duvall says. "I think when we do that, it's going to give us a better opportunity to speak to Congress about the needs we have for labor and find a fix for our problems."

At press time, Trump had signed a bill to reopen the government for roughly three weeks after backing down from his requirement of funds for a border wall before federal agencies could go back to work. ///



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Spoon-Feeding Home Brews

Weather, fertility, timeliness—and contest plots—are raising this farmer's corn targets.

Drew Haines had been working for five years

to boost the corn yields he pulls from his Maryland operation. And, he's done well rising to state and national ranking in the National Corn Yield Contest.

Haines farms near Middletown and placed second nationally in the competition for 2017 with his nonirrigated entry of DEKALB DKC62-20RIB. A commercial agronomist who works with more than 100 customers of a grain and fertilizer, and custom-application business, Haines harvested 341.6354 bushels per acre off his contest plot.

"Our farm typically includes 250 acres of corn, 250 of soybeans and 200 acres of hay, along with some wheat we use for rotation," he explains. "Overall, corn yields run about 275 bushels per acre, and, our beans average 80 bushels.

"The corn contests have helped us fine-tune our fertility program to boost plant vigor and yield across the

farm, and, even with per-acre input costs above average in our contest plots, we're still making money with higher yields."

Haines says his intense nutrient management doesn't just "buy" bushels.

"While I'm very interested and involved in striving for high contest yields, if we weren't making money on our production, why do it?"

THREE KEYS

Haines counts his fertility management, timeliness of crop care and blessings of good weather in his immediate area as the three keys to his high-intensity corn production.

He has no irrigation equipment. Without rain, things turn ugly fairly quickly, he says. "Since we've been entering the contests, we've had some drought spells; but, overall, over the past four years, every time it starts getting dry, we get a shower to keep us going when 30 to 40 minutes either way from us, growers get some drought stress."

He has noticed ground temperatures varying annually, with a trend toward cooler springs and warmer, longer seasons into December. The shifting growing season has impacted his hybrid choice.

"Every year, we plant variety trial plots which run from 105- to 120-day varieties. That's how I pick the ➤

There's gold in those strips. Drew Haines picked 341.6 bushels per acre from one of his 2018 contest plots.

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“The soil has to be a well-tuned machine before you even start. Much like your tractor or combine, you want that soil hitting on all cylinders.”

—Drew Haines



contest varieties. Over the past couple of years, we’ve noticed the longer-maturing varieties are outyielding the shorter maturities—at least on our farm,” he explains. In the past, he had been selecting seed choices ranging from 100 to 110 days maturity. Now, more often than not, he is selecting hybrids for 110 to 120 days.

Fertility comes down to timing, Haines says. “The soil has to be a well-tuned machine before you even start. Much like your tractor or combine, you want that soil hitting on all cylinders. You have to deliver it [fertility] before the crop needs it,” he believes.

CATION EXCHANGE

A typical production year for Haines includes soil testing in March. That allows him to set initial yield goals and make total-season NPK (nitrogen, phosphorus, potassium) decisions. “The main thing I look for is cation exchange capacity and soil organic matter levels,” he says. (Soil nutrients exist as positively charged or negatively charged ions when dissolved. The positively charged ions are known as cations, and, the negatively charged ions are known as anions.)

“Over the past eight years, we’ve been able to trace increases in both categories because of the manure we apply and from the increased residue in our fields because of higher yields,” he says.

Haines uses pen-pack manure from dairy heifers that has a high straw content, which aids in the amount of

organic matter being spread and are valuable additions of N, P and K as a number of micronutrients. He uses the manure on a third of his contest acres each year before planting in a three-year rotation scheme. “By watching the agronomic capabilities of our soils, we know when we can put more fertility on up front and still come back and topdress to keep the plants performing at their peak,” he says. “This past year was so wet, we actually made two topdress applications.”

Haines says his N target on contest fields is 300 to 350 pounds per acre, along with around 120 pounds of phosphorus and 200 to 250 pounds of potash.

“Also, we have to maintain sulfur levels, because industrial pollution controls have removed high levels of sulfur from the atmosphere,” he explains. “We keep up by adding a pound of sulfur for every 8 to 10 pounds of N we apply.”

Haines also has worked with a supplier to formulate a liquid sugar solution he calls “NecTar.” He applies the solution in place of insecticides and to help break down residue, and boost microbial activity in his fields.

MAKING NECTAR

“Four years ago, we had a late-season aphid outbreak even though I was using insecticides on both of our over-the-top foliar applications,” he recalls. He noticed residue in the fields was turning black in circular areas, so, Haines consulted with a University of Maryland >

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entomologist who told him insecticides were killing the beneficial insects, too.

"I'd been experimenting in my garden with granular sugar and had noticed where I used it, the bugs would avoid my potato plants," Haines says. He took that knowledge to the field and started applying sugar in the foliar applications instead of insecticides. It worked.

"The Japanese beetles didn't get in the silks, and, aphid numbers were reduced in my bean fields. We also noticed more beneficial insects," he says. "We were buying sugar by the pallet."

Because handling granular sugar is messy and difficult, Haines worked with his good friend Barry Aycock to blend a liquid sugar solution that could be mixed with cold water and that would remain in suspension. The result was NecTar. "This stuff is amazing. This year, in addition to the foliar applications,

Drew Haines finds that longer-maturing varieties are outyielding his shorter-season maturities. That finding has lead him to increase his hybrid maturities 10 to 20 days.



I used NecTar in-furrow at a half-pint per acre, and, we'll watch to see what benefits that might produce."

Through this season, he has had no trouble with Japanese beetles, and, his soybeans were free of most diseases and insects. "Nearby, however, some of our neighbors' fields were full of grasshoppers," he says. "We had no grasshoppers, and, we haven't used an insecticide for three years," he adds. Haines also uses the sugar solution as an adjuvant in glyphosate and says it seems to enhance burndown.

"We put the bulk of our P and K through the planter or spread it up front, preplant," he explains. "Ahead of the planter, we apply liquid N [30%] and a mixture of Roundup, TripleFLEX and Harness, and then we plant." He uses a simple shop-built in-furrow system on his JD 7200 six-row planter. All of his seed has been treated.

The next application is an aerially applied foliar fertilizer application when the corn is 6 to 12 inches tall and includes a mixture of AgXplore products, which stimulate larger ears. The next foliar application is a blend of AgXplore products and Haines' home brew containing N, P, K, boron, zinc, sulfur, NecTar and humic and folic acids. It's a concoction Haines markets as "Dillweed Juice." It is aimed at stimulating plant health and adds test weight to the grain.

"We came up with the mixture through on-farm testing," Haines explains. "I named it 'Dillweed' because that was my nickname as a boy."

OVER THE TOP

That product is flown onto his corn several times during the season, beginning with the aerial foliar feeding. The second comes at topdress about two weeks before tasseling. A third application includes

dry urea, ammonium sulfate and potash. A final mixture of Dillweed Juice and a fungicide is typically flown on after pollination and brown silks.

"Usually about three to four days after the foliar applications, you'll see the corn take on a renewed, deep-green color," Haines explains. The goal is to keep the crop from wanting anything.

"We keep it up until just before harvest. We don't want to see corn die, and, ours is still green when we're shelling at 18 to 20% moisture," he says. "You have to have fertility right and take care of it, then, you have to take care of the seeds you plant." ///



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SUPER COUPON **Lynxx**

40 VOLT LITHIUM CORDLESS 14" BRUSHLESS CHAIN SAW

Customer Rating ★★★★★

NOW \$154⁹⁹

COMPARE TO \$179 **SAVE \$25**

ITEM 64715/64478/63287 shown

18837209

LIMIT 1 - Coupon valid through 7/1/19*

FISCHER **SUPER COUPON**

HEAVY DUTY MULTI-VEHICLE 750 LB. HIGH LIFT JACK

Customer Rating ★★★★★

• 500 lb. saddle capacity

NOW \$169⁹⁹

COMPARE TO \$434 **SAVE \$264**

ITEM 63298

18871376

LIMIT 1 - Coupon valid through 7/1/19*

PITTSBURGH **SUPER COUPON**

3 PIECE CURVED JAW LOCKING PLIERS SET

Customer Rating ★★★★★

NOW \$699

COMPARE TO \$999 **SAVE 30%**

ITEM 64036/61804/61248/64035 shown

18876071

LIMIT 1 - Coupon valid through 7/1/19*

KRAUSE & BECKER **SUPER COUPON**

AIRLESS PAINT SPRAYER KIT

Customer Rating ★★★★★

NOW \$169⁹⁹

COMPARE TO \$299 **SAVE \$129**

ITEM 60801/62915/60680 shown

18897973

LIMIT 1 - Coupon valid through 7/1/19*

SUPER COUPON

3 PIECE DECORATIVE SOLAR LED LIGHTS

Customer Rating ★★★★★

NOW \$799

COMPARE TO \$1,799 **SAVE 55%**

ITEM 95588/60561/69462 shown

18898820

LIMIT 4 - Coupon valid through 7/1/19*

PITTSBURGH **SUPER COUPON**

9 PIECE FULLY POLISHED COMBINATION WRENCH SETS

Customer Rating ★★★★★

NOW \$599

COMPARE TO \$1,797 **SAVE 66%**

ITEM 42305 shown

18870840

LIMIT 4 - Coupon valid through 7/1/19*

CENTRAL MACHINERY **SUPER COUPON**

20 TON SHOP PRESS

Customer Rating ★★★★★

• Extreme heavy duty steel construction

NOW \$139⁹⁹

COMPARE TO \$309 **SAVE \$170**

ITEM 32879/60683 shown

18868933

LIMIT 1 - Coupon valid through 7/1/19*

PITTSBURGH **SUPER COUPON**

PNEUMATIC ADJUSTABLE ROLLER SEAT

Customer Rating ★★★★★

• 300 lb. capacity

NOW \$199

COMPARE TO \$269 **SAVE 69%**

ITEM 61168/61896/63456/46319 shown

18858243

LIMIT 2 - Coupon valid through 7/1/19*

PITTSBURGH **SUPER COUPON**

42" OFF-ROAD/FARM JACK

Customer Rating ★★★★★

• 3-1/2 ton capacity

• Multipurpose design for lifting, pulling and spreading

• Ideal for lifting off-road vehicles and field equipment

NOW \$399

COMPARE TO \$599 **SAVE 33%**

ITEM 60686/6530 shown

18854907

LIMIT 2 - Coupon valid through 7/1/19*

PITTSBURGH **SUPER COUPON**

6 TON HEAVY DUTY STEEL JACK STANDS

Customer Rating ★★★★★

NOW \$349⁹⁹

COMPARE TO \$745 **SAVE 53%**

ITEM 38847/63596/62393/61197 shown

18852411

LIMIT 1 - Coupon valid through 7/1/19*

CENTRAL PNEUMATIC **SUPER COUPON**

6 GALLON, 1.5 HP, 150 PSI PROFESSIONAL OIL-FREE AIR COMPRESSOR

Customer Rating ★★★★★

• Air delivery: 2.5 CFM @ 90 PSI 3.4 CFM @ 40 PSI

NOW \$999

COMPARE TO \$1,699 **SAVE \$70**

ITEM 68149/62388/62511/62894/67696 shown

18848169

LIMIT 1 - Coupon valid through 7/1/19*

CENTRAL PNEUMATIC **SUPER COUPON**

3/8" x 50 FT. RETRACTABLE AIR HOSE REEL

Customer Rating ★★★★★

NOW \$599

COMPARE TO \$99 **SAVE \$39**

ITEM 69265/62344/64685/93897 shown

18838473

LIMIT 2 - Coupon valid through 7/1/19*

drill master **SUPER COUPON**

1500 WATT DUAL TEMPERATURE HEAT GUN (572°/1112°)

Customer Rating ★★★★★

NOW \$899

COMPARE TO \$1,499 **SAVE 67%**

ITEM 62340/62546/63104/96289 shown

18837681

LIMIT 4 - Coupon valid through 7/1/19*



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Luck runs out, but SAFETY is good for life! Don't gamble on your safety.
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*When you practice safety and health
You gain a great deal of wealth
Human life cannot be replaced
A loss no one should face
So always choose safety and value health*

Progressive Agriculture Safety Days® have provided the education, training and resources to make farm, ranch and rural life safer and healthier for children and their communities. For 25 years, Progressive Agriculture Safety Days® have helped local communities conduct a one-day safety and health educational program designed to be age-appropriate, hands-on, fun and safe for children ages 4 to 13. Since 1995, more than 1.7 million children and adults have been impacted.



Leaving a Lasting Legacy: Tom Wall was a beloved husband, father and extremely active community member. Among many achievements, Tom was recognized as an Iowa Master Farmer and served as a 34-year leader of a local 4-H club. Tom was tragically killed in a tractor-roadway incident on May 26, 2016, at the age of 55. Since the day of Tom's passing, the Wall family vowed to turn their loss into something good for others. One day, Tom's daughter Sarah, who participated in a Progressive Agriculture Safety Day® as a child, decided to ask people to donate in her dad's name. This small act raised more than \$500. This will enable the Progressive Agriculture Foundation to send at least 44 participants to a local Safety Day in their community. The Progressive Agriculture Foundation thanks Sarah and her family for designating a memorial gift in Tom Wall's name. This generous gift shows how you can honor the memory of a loved one by investing in the safety of children living on farms and ranches, and in rural communities.



DONATE NOW \$13 SENDS A KID TO SAFETY DAY!

DONATION
AMOUNT

A **MODEST DONATION** of only \$13 can have a **BIG IMPACT** on children living in farming and rural communities near you. Make a safe investment by helping another child attend a Progressive Agriculture Safety Day® in his or her local community. Donating has never been easier, with three ways to give:

1. Text **"SAFETYDAY"** TO 41444.
2. Visit our website, www.progressiveag.org, and click the **"Donate Now"** button.
3. Send your payment to Progressive Agriculture Foundation, P.O. Box 530425, Birmingham, AL 35253.

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The Progressive Agriculture Foundation (PAF) is proud to be recognized as a Better Business Bureau Accredited Charity. Additionally, PAF has a 3-star rating with Charity Navigator and was awarded a Gold Seal of Transparency with GuideStar. All donations are tax-deductible.

Find Us Online

Visit progressiveag.org or call us at 888-257-3529 for a complete list of all upcoming 2018-2019 Safety Days, or to see how you can host a Safety Day during 2020.



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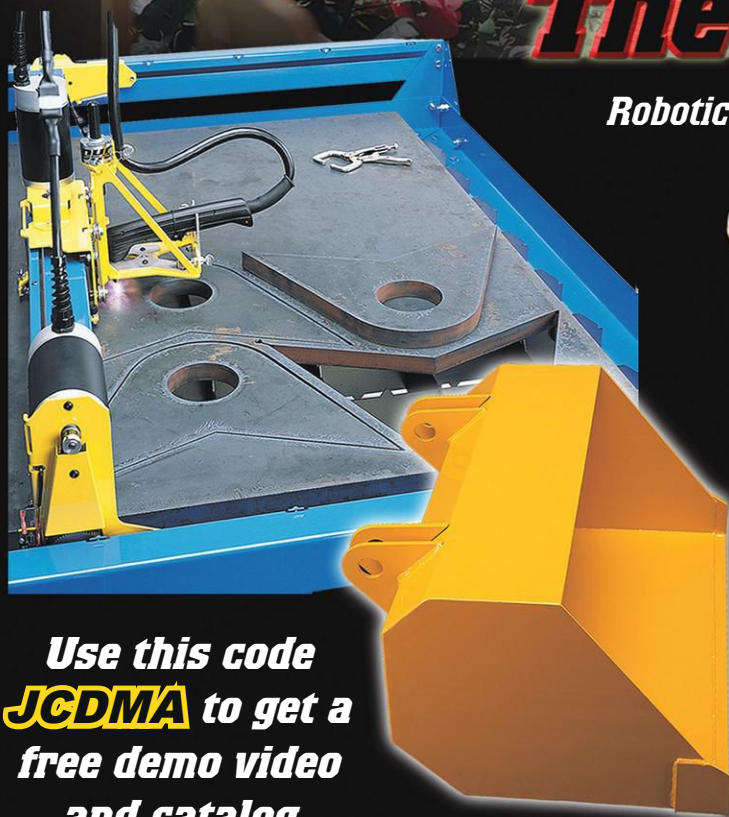
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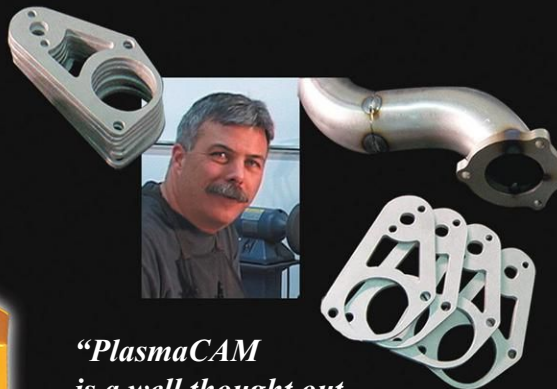


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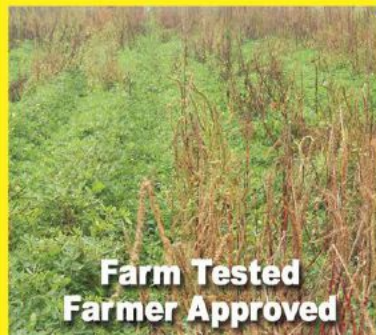
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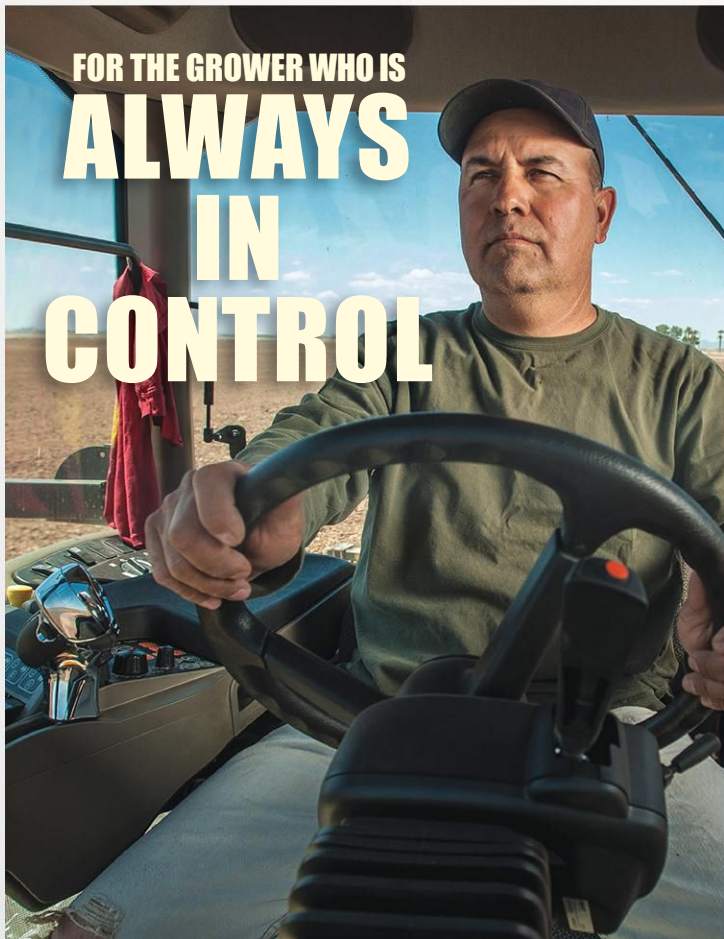
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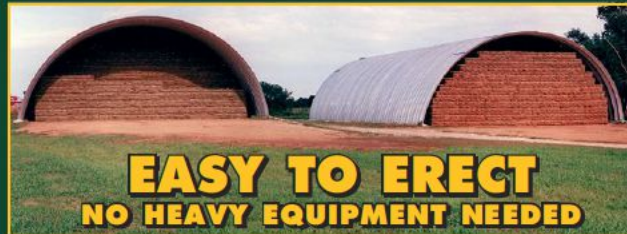
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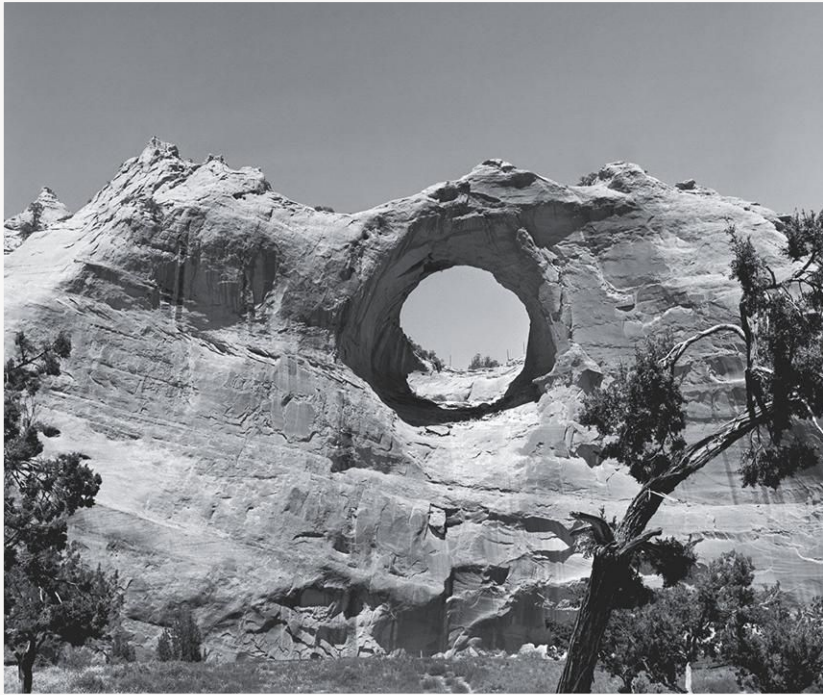
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*“I think 99 times
and find nothing.
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swim in silence,
and the truth
comes to me.”*

—Albert Einstein

Silence

Unto me men gave ear,
and waited, and kept
silence at my counsel.

JOB 29:21 (KJV)

Don't ever mistake my
silence for ignorance, my
calmness for acceptance or
my kindness for weakness.
Compassion and tolerance
are not a sign of weakness,
but a sign of strength.

DALAI LAMA

A fool is known by his
speech; and a wise man
by silence.

PYTHAGORAS

As we must account for
every idle word, so must
we account for every
idle silence.

BENJAMIN FRANKLIN

Without great solitude no
serious work is possible.

PABLO PICASSO

Our lives begin to end
the day we become silent
about things that matter.

MARTIN LUTHER KING JR.

Speech is silver,
silence is golden.

THOMAS CARLYLE

The right word may be
effective, but no word
was ever as effective as a
rightly timed pause.

MARK TWAIN

Everything has its
wonders, even darkness
and silence, and I learn
whatever state I am in,
therein to be content.

HELEN KELLER

I often regret that I have
spoken; never that I have
been silent.

PUBLILIUS SYRUS

The tree of silence bears
the fruit of peace.

UNKNOWN

Silence is the sleep that
nourishes wisdom.

FRANCIS BACON

Souls of prayer are souls
of great silence.

MOTHER TERESA

The human heart has
hidden treasures, in
secret kept, in silence
sealed; the thoughts, the
hopes, the dreams, the
pleasures, whose charms
were broken if revealed.

CHARLOTTE BRONTË

Nature grows her plants
in silence and in darkness,
and only when they have
become strong do they
put their heads above
the ground.

ANNIE BESANT

It is better in prayer to
have a heart without
words than words
without a heart.

MAHATMA GANDHI

There is something
terribly wrong with a
culture inebriated by
noise and gregariousness.

GEORGE STEINER

In silence there is
eloquence. Stop weaving
and see how the pattern
improves.

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