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ON THE COVER
Companies are investing millions of dollars in biologicals. But, farmers have many questions on product performance.

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Biologicals have the potential to use the soil's microbes to enhance crop performance.

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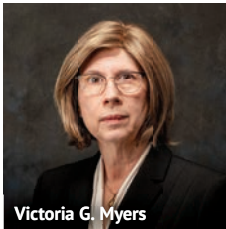


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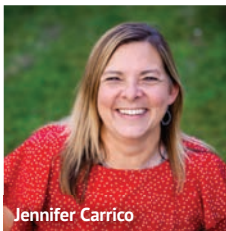
Transitions

Ringing in 2024 brings a promise of new opportunities and opens the door for change. It's no different here at DTN/*Progressive Farmer*. With this issue, we say a fond farewell to a valued editor and welcome a new one.



Victoria G. Myers

Readers of this magazine and **DTNPF.com** are well familiar with the byline of Victoria G. Myers. She has championed our cattle and land coverage for the past 14 years, overseeing the Cattlelink section in *Progressive Farmer* and the online e-newsletter. What you may not know is she was originally hired in 1989 as Cotton Editor.



Jennifer Carrico

Under the tutelage of MidSouth Regional Editor Earl Manning and Executive Editor Del Deterling, Vicki thrived covering the cotton industry, interviewing its leaders, agribusinesses and, of course, countless cotton farmers, sharing their stories with the readers of *Progressive Farmer* to help them improve their own operations. Vicki lived and breathed cotton.

Years later, her role changed. Former *PF* Editor Jack Odle saw a need to increase livestock coverage and asked Vicki to leave the world of cotton to report on cattle, a topic she knew little about at the time. She learned quickly thanks to her work ethic and journalistic talents.

As we say goodbye, Vicki is transitioning again from award-winning editor to lawyer. While working full-time here, she was taking night classes to earn her law degree. She recently started a civil and probate law practice aimed at helping families with inheritance and succession planning, and is also an advocate for the elderly who need trusted advice on a host of issues. We wish Vicki well and are eternally grateful for her many contributions to DTN and *Progressive Farmer*.

With Vicki's departure, we welcome Jennifer Carrico, who will lead our cattle coverage as Senior Livestock Editor. Previously, Jennifer was editor of *Wallaces Farmer*, covering agriculture

across the state of Iowa. She has also written for *Iowa Farmer Today* and *High Plains Journal*.

Jennifer has deep roots reporting on the cattle industry and brings a boots-on-the-ground approach to her stories running her own beef cattle operation on her family's Heritage Farm, near Redfield, Iowa. Her two children are the sixth generation to grow up on the farm, and both have had great success showing cattle across the country.

Jennifer is always interested in hearing from other cattle producers. Send an email to jennifer.carrico@dtn.com to reach her.

Don't Overlook This Expense

While reviewing 2024 crop budgets, University of Illinois Extension specialist Bradley Zwilling reminds us not to ignore family living costs.

Looking at numbers from 1,329 farm families enrolled in the Illinois Farm Business Farm Management Association, total noncapital living expenses in 2022 averaged \$7,600 a month. That was about 6% higher than the previous year. Figures for 2023 weren't available, but stubborn inflation likely resulted in higher expenses.

Here's another way to look at these costs: Zwilling studied total family living expenses (expendables plus capital) and divided them by tillable operator acres for 2013–2022.

In 2013, all of the family living costs averaged about \$121 per acre. Costs steadily declined through 2019 until rising to \$118 per acre in 2022. The 10-year average of total family living expense was \$108.

When compared to the 10-year average of net farm income per acre of \$174 for the group, 62% of the net farm income is family living expense, he explains. So, a \$118-per-acre family living expense is equal to a 54-cent-per-bushel price change on 220-bushel corn. When you take total family living expenses minus net nonfarm income, this equals \$56 per acre in 2022 and was \$47 per acre for the five-year average. This would be the part of family living that is covered by farm income.

A handwritten signature of Gregg Hillyer in black ink.

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WE'D LIKE
TO MENTION



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Benefits of Paying Self-Employment Tax

Most farmers don't want to show self-employment (SE) income. After all, why pay the SE tax? To avoid it, they set up complex structures to reduce/shift income. But, is paying a SE tax bad? Are there any benefits to showing SE income?

Before discussing why some SE income is good, let's talk about the consequences of avoiding the SE tax. First, when you retire, you will receive little or no Social Security benefits. In addition, you probably didn't pay in enough quarters for disability in case of an accident.

Besides losing benefits, trying to avoid tax can result in negative capital accounts, excessive debt and unproductive (or underproductive) assets. Spending \$1 to save 30 cents on something you don't need is never advisable. The IRS allows you to play these games because usually one of two things happens, both of which benefit the IRS. The first one is you can't transfer your farm to your kids without paying significant taxes. The second is when you wind down and sell, you will be paying much higher tax rates than if you just paid a little tax each year.

Now that you have decided to have some positive SE income, what should you know about Social Security and Medicare? First, Social Security is progressive. That means the more SE tax you pay, the lower the rate of return is for the "investment" in Social Security. For example, lower earners (averaging \$25,000 of SE income per year) might receive \$12,000 a year (replacing about half their income). But, higher earners might receive \$36,000 a year (replacing less than 30% of their income). This is why many middle or higher earners have to use 401(k)s or IRAs to supplement Social Security.

Because Social Security benefits are not substantial to the amount of tax you paid to receive them, the key is to show enough SE income to qualify but not so much that you go too far into the second bend point. Also, keep in mind you will need 40 credits to be eligible for Social Security. So, you will need to have SE income for at least 10 years (can be nonconsecutive).

In my opinion, Social Security isn't the most important benefit. It's Social Security Disability Insurance (SSDI). To qualify for SSDI, you need to have earned 20 work credits for the past 40 quarters. Simply put, work five out of the 10-year period prior to the disability. This is subject to the recent work test and the duration of work test, which may reduce this requirement.

For reference, you receive one work credit for every \$1,640 of SE earnings.

According to USDA, about 19% of farmers become disabled. Most farmers buy farm/liability/crop insurance, but rarely have I seen disability insurance. In my opinion, it's worth paying under \$1,000 in tax per year to qualify for SSDI. And, if you meet the requirements for SSDI, you may qualify to get Medicare Part A for free.

Now that you have decided you want to pay into Social Security/Medicare but are not sure you like the idea of showing SE income, there is an option available to farmers. If a farmer has gross farm income under \$9,840 or farm profits under \$7,103, the farmer can elect two-thirds gross farm income (up to \$6,560) as net earnings.

As you can see, paying a minimal amount of SE tax isn't bad, especially if you are a younger farmer without disability insurance. ///

TOOLS FROM THE PAST

This device proved useful on icy roads.

What is it?



Answer: *This is a buggy brake. The wheel sits between the iron sides and prevents the buggy from running into the back of the horses going down a hill and in icy conditions. When not in use, the hook was used to hang it from the buggy or wagon.*



Rod Mauszycki

DTN Tax Columnist Rod Mauszycki, J.D., MBT, is a tax principal with CLA (CliftonLarsonAllen) in Minneapolis, Minnesota.

► Read Rod's "Ask the Taxman" column at **ABOUT.DTNPF.COM/TAX**

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Jan. 12: WASDE Report: DTN Lead Analyst Todd Hultman breaks down the grain stock numbers, world supply and demand estimates, and what it all means for U.S. commodity markets.

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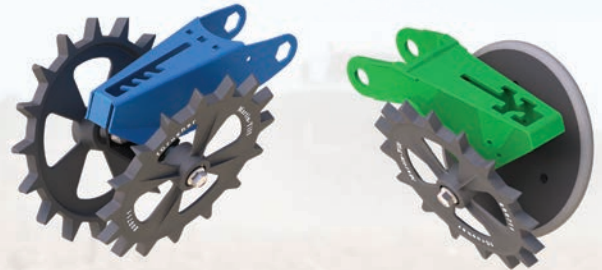
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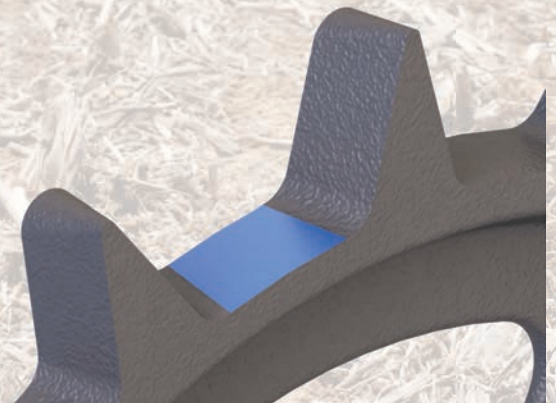
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Another U.S. Corn Harvest In, This Crop Has Demand

If you listen to producers around the country, many are still perplexed and a little amazed by the amount of corn they were able to grow with such little help from Mother Nature last year. According to USDA, American farmers harvested a record corn crop of 15.23 billion bushels (bb) in 2023, posting a national yield of 174.9 bushels per acre. For many, the only significant rains of the year arrived in July and early August,

or \$5.08 a bushel, based on USDA's average yield. Different farms have different costs and different yields, but generally speaking, many will be eligible for a crop insurance payment to cover part of last year's price loss. The coverage won't be so helpful in 2024, when lower average prices in February bring down protection levels.

As we head into winter, it's typical for trading in corn to turn quiet, especially when supplies are plentiful, as they now are in 2023–24. The good news is that corn demand has been active at these lower prices. Ethanol plants have been busy, producing 6% more ethanol in the early months of 2023–24 than this time a year ago. Export sales of corn have also been more active, now 33% higher than the previous year thanks to Mexico taking 432 million bushels (mb) of the 831 mb sold so far.

This may sound familiar, but the bearish threat to corn prices in 2024 will once again come from Brazil. Brazil first surpassed the U.S. in corn exports in 2022–23 and is expected to hold the lead in 2023–24. It is too early to tell just how Brazil's new crop will go, however. Brazil's larger safrinha corn crop is planted on the heels of the soybean harvest in February.

In late 2023, however, central

Brazil's rainy season was hotter and drier than usual, and may result in a later planting date for Brazil's corn, exposing crops to more of Brazil's dry season. Brazil's crop agency, Conab, estimates Brazil will produce 119.1 million metric tons (mmt), or 4.69 bb, of corn in 2023–24, down from the previous year's record 5.39 bb crop. USDA is estimating a 129.0 mmt, or 5.08 bb crop, but unless Brazil's weather improves soon, both estimates will need to come down, a potentially bullish boost for U.S. corn prices.

Stay tuned as the new season unfolds in early 2024. ///



GETTY IMAGES

leaving crops dry for long stretches, often suffering high temperatures. Of course, planting 94.9 million acres was an important part of achieving this year's record crop, but generally speaking, yields held surprisingly firm, earning high praise for the value of genetically modified crops.

The ironic twist of having success in the field is farmers' bank accounts tend to get punished. DTN's national average for cash corn was near \$4.50 a bushel near early December, down from \$6.78 the previous year. USDA recently estimated the cost of producing corn at \$888.23 an acre in 2023



Todd Hultman
DTN Lead Analyst

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Katie Dehlinger

DTN Farm Business Editor

► Read Katie's business blog at
ABOUT.DTNPF.COM/BUSINESS



BUSINESSLINK

Create Better Systems, Build a Better Business

Santa Claus is fresh in my children's minds.

It's been a week since they ripped open their stockings and marveled at the toys made by teeny elfin hands.

They're still fighting over whose turn it is to play with that Paw Patrol action figure, but at least for now, the promise that Santa is watching helps them resolve it somewhat peacefully.

But, the importance of Santa's approval will fade, and the threat of landing on the naughty list will lose its motivation. It's on to the Easter Bunny.

I like to think of New Year's resolutions in much the same light as Santa Claus.

As we turn the calendar from one year to the next, it's a natural moment to pause and reflect on ourselves, our lives and our businesses. The motivation we often feel after a good bout of self-reflection can be a powerful driver of change if we go about it the right way.

Most of the time we don't. After a week or two of earnest effort, we get busy or distracted, or disheartened that our efforts aren't reaping rewards in the immediate way we had hoped. The change we sought, with the best intentions and strongest motivation, fades away.

"You do not rise to the level of your goals. You fall to the level of your systems," writes James Clear in his book "Atomic Habits: Tiny Changes, Remarkable Results." "Your goal is your desired outcome. Your system is the collection of daily habits that will get you there. This year, spend less time focusing on outcomes and more time focusing on the habits that precede results."

It's been more than a year since I first read Clear's book, and I often catch myself thinking about this passage, usually when I recognize that what I'm doing in that moment doesn't get me closer to achieving my goals.

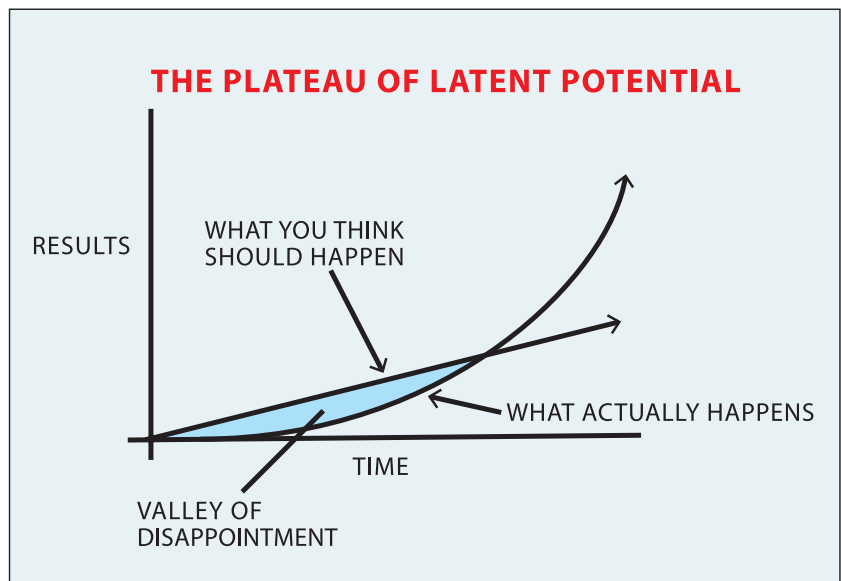
Clear argues that the way to achieving goals is to focus on your systems, which are built on a multitude of tiny habits. Habits—the things we do day in and day out with nary a thought—can work for or against you, often like compounding interest.

He begins the book with an anecdote about Great Britain's professional cycling team. After underwhelming performance

for a century, a new coach went in search of "the aggregation of marginal gains." They broke down everything it took to ride a bike and looked for all the ways to get 1% better. Just five years later, the Britons dominated the 2008 Olympic Games.

The late Danny Klinefelter, a longtime *Progressive Farmer* columnist and Texas A&M University professor, preached the power of small changes in what he called the "5% rule."

"A 5% increase in price received, a 5% decrease in costs and a 5% increase in yield will often produce



more than a 100% increase in net returns. The effect is cumulative, multiplicative and compounding," he wrote in his last column before retirement in 2017.

So, rather than make a resolution, I urge you to consider a different approach. Think about habits, whether they're yours or habits ingrained in your business operations, you can change. Then do it. Clear's book has great recommendations for how to do that if you're unsure where to start, but the most important piece is starting.

"Time magnifies the margin between success and failure," he writes. "It will multiply whatever you feed it. Good habits make time your ally. Bad habits make time your enemy." ///

Time To Make Less More

BY Tiffany Dowell Lashmet

In fitting right in with my Type-A, Enneagram-3 personality:

I love a list of goals for the New Year. Not really resolutions, per se, but goals that I want to accomplish. For many years, these goals have included things like running another half marathon, reading 20 books, reading the entire Bible in a year and so on.

As we flip the calendar to 2024, my perspective has shifted a little. It may be because I am getting older, and time seems to be moving faster. It may be the fact that the world just feels overwhelming with news of wars and pain and heartache on a daily basis. It may be because my children are getting more involved in activities, and trying to balance football practice and spelling words and showing livestock all over the United States about did me in this fall.

Whatever the reason, I am approaching my 2024 goals differently. Rather than my usual list, my goal for 2024 is one simple word: less.



PHOTOS: TIFFANY DOWELL LASHMET

I want less stress and less on my calendar and less procrastination. I want to spend less money and eat out less and worry less. I'd desperately like less clutter in my house and less mental load in my brain. I'd love a year of less guilt and fewer "shoulds." I'd like to consume less sugar and have less screen time and spend less time thinking about things that do not matter.

My hope is that all this less will actually result in more. More connection with the people I love. More space to dream and reflect and rest. More healthy eating and care for our mental and physical selves. More memories to make and movie nights to experience and stories to read. Above all, more laughing and cherishing each moment.

Whatever your goals for 2024, I wish you joy in the pursuit. ///



Tiffany Dowell Lashmet juggles family, farming, fairs, writing and a career in ag law from the Texas Panhandle. Follow her blog at alwayssafarmkid.com, on Instagram [alwayssafarmkid](https://www.instagram.com/alwayssafarmkid) and on X [@TiffDowell](https://twitter.com/TiffDowell)

Sleds, Snow Signal Go!

BY Katie Pratt

In a life of

constant "go," my family attempts to squeeze in days dedicated to fun. Swimming in the summer, campfires in the fall and sledding in the winter.



PHOTOS: KATIE PRATT

Enjoying winter's wonderland is second nature for me and my siblings. Growing up, my family raised cattle and pigs. This meant we weren't allowed a day "stuck indoors" because of the weather. On the coldest of days bent against a blast of snow, we spent hours in the barns bedding cattle and checking water troughs.

Some days, my Grandma June would be waiting when we got off the bus, her cross-country skis strapped on, poles at the ready. We'd toss our backpacks in the corner of the mudroom, disregard the after-school snack and rush through chores. Cross-country skiing was always an adventure. We skied until the moon rose, crossing the fields, sometimes dragging sleds behind us to use on the few hills dotting our pastures.

These days, my kids join their cousins at Nana and Papa's. My son is the conductor of the sled train, roped to the Gator hitch. He maneuvers through the soybean field and out into the pasture to the sledding hill.

The hill is just a bump on these Midwestern flatlands. A dusting of snow provides enough friction to make the sleds soar. After a few trips down, a path has been established. The cardinal rule is no walking up the sled path. Instead, we tromp a trail off to the side leaving the face of the hill for sleds.

Challenges are given. Who can make it to the creek bank? How many people can fit on one sled?

Hours of laughter later, rosy cheeks and frozen toes stumble inside for a cup of cocoa, a cookie and another chapter of winter memories to add to our book of life. ///



Katie Pratt, a north-central Illinois farmer, celebrates snow and hot cocoa in equal measure. Find her writing blog at theillinoisfarmgirl.com



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These three pillars guide stewardship efforts and an intensive-grazing system on this Nebraska ranch.

As he strolls through the pastures, boots parting the grasses as he walks, Logan Pribbeno can hear his father saying: “You’re just renting a piece of land in eternal things. Try to leave it better than you found it.” And, true to that admonition, nearly every management decision the Pribbenos make on the family’s Wine Glass Ranch is aimed at preserving, conserving and improving the condition of the land they steward.

That’s a big task for a ranch that is spread out over 18,000 acres of native pasture and incorporates an intensive-grazing system near Imperial, Nebraska. The 130-year-old family operation’s catchy name stems from the shape of an original cattle brand registered to its herd in the 1930s.

Pribbeno grew up on the southwest Nebraska ranch in the 1990s but left to pursue a financial consulting and accounting career on the West Coast. He returned in 2012. Since then, he and his wife, Brianna, along with his parents, Jeff and Connie Pribbeno, have been busy managing the operation’s grazing and crop production in the Chase County area.

As a family, the Pribbenos’ conservation efforts were acknowledged in 2022, when the

Pribbeno uses a wagon wheel layout to rotate cattle between 90 pasture paddocks.

ranch was awarded the Leopold Conservation Award for Nebraska.

> ROTATIONAL-GRAZING PLAN

The 18,000 acres of native pasture, originally divided into 90 paddocks in 1987 in a “wagon wheel” configuration, has centrally located watering facilities made up of 50 miles of pipeline, more than 100 miles of crossfencing and 120 stock tanks. The cattle are rotated through the paddocks in an organized manner to prevent trampling of fresh forage. The rotation intervals follow adaptive decisions based on weather, growing conditions, markets and makeup of the herd.

The main grazing component includes stands of sand reed, sand bluestem, switch- and indiangrass, with patches of little bluestem. The ranch also includes 4,500 acres of nonirrigated sandy cropland primarily managed in no-till production of corn, millet, wheat and milo, as well as full-season cover crops. The cover crops improve soil conditions and provide additional forage for the beef herd when prairie grasses are dormant.

Pribbeno says in good years with adequate moisture, the cattle may spend only five days twice a year on any given paddock. However, those intervals change continually according to immediate conditions and more formal annual forage evaluations,

Logan Pribbeno regularly checks the native grass stands in pastures that cattle graze on their Nebraska operation.



as well as 12-month rainfall outlooks. Even the makeup and size of the herd changes, generally on a five-year cycle for cow/calf production, alternating with five years of stocker production.

“Currently, we are 85% cow/calf and in cow herd growth,” he explains. “We have cows when markets are good and not so many cows when they’re not so good. We try to be as adaptive to all the changing variables as we can.”

“We’re the graziers of the county,” Pribbeno continues. With their 90-paddock rotation system and 4,500 acres of cropland, plus rented pastures, they have kept up to 3,000 beef cattle in a single group at times, all the while trying to improve the land’s soil conditions and carrying capacity.

By grazing fields of cover crops and harvested crop residues, the operation provides income for neighbors while helping recycle nutrients behind the cattle.

> CROP VARIABILITY

Pribbeno describes the dryland farming operation as “iffy,” with the area receiving only 19 inches of precipitation annually. Many years see far less moisture.

“While fallow is a common practice in our area because of dry conditions, we try to use the ‘fallow’ period for cover crops to grow on tough acres where we may have taken off a corn crop,” he explains. “Those covers grow into the warm season, when we can graze them.”

Typically, they aim for full-season covers (forage and others) on about one-third of the farm each year while planting corn, milo, millet and wheat on the remaining acres. That’s not a fixed rotation ratio, Pribbeno adds. It depends each year on markets, available residue and weather. They like to throw wheat into the cover-crop mix then grow corn or milo in the wheat stubble the following summer.

The cash-crop farm is a separate accounting entity from the beef operation, and yields swing widely in proportion to the rain gauge. Over the years, dryland corn averages are about 80 bushels per acre. Many years, the corn crop completely fails, and some years, it yields 150 bushels per acre. Grain sorghum is more drought tolerant and, in good years, can make 120-plus bushels per acre.

> BENEFICIAL HABITAT

Another example of how the family combines conservation with profitability is its use of “ecological edges” as habitat for beneficial insects. All their cropland is bordered with a mix of perennial native grasses. Beneficial predator insects like lady beetles, flowerflies and tachinid flies thrive in these areas. When pests descend



on crops, the beneficial predators are already present to help control the pests. This shift in insect ecology has allowed the Pribbenos to eliminate the use of broad-spectrum insecticides.

“If you make these changes on 2% of your acres, it will affect wildlife on the entire operation,” he explains. “Habitat is everything. It affects soil microbes to mammals to waterfowl.”

The ranch has an abundance of greater prairie chickens, which congregate where farmland meets rangeland, along with pheasants on Conservation Reserve Program (CRP) acres. Mule deer also are abundant on the ranch. The family makes areas of their property available to public hunting with Nebraska’s walk-in hunting access program.

Every quarter section of the ranch has 2 to 10 acres enrolled in CRP and/or wetland conservation programs. In all, 750 environmentally sensitive acres are enrolled in the program, with another 61 wetland sites on 107 acres of the ranch enrolled in wetland restoration and buffer strip programs.

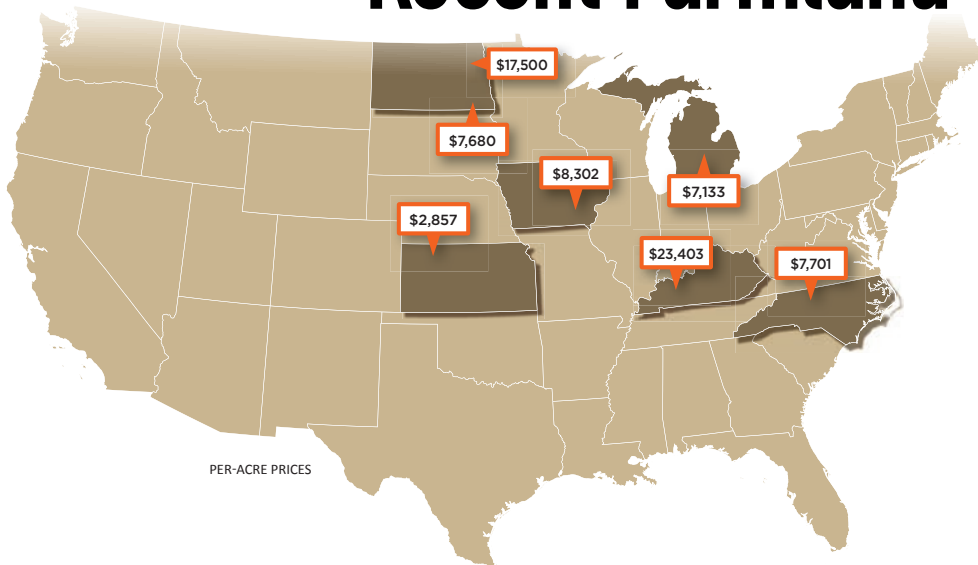
Before Pribbeno came back to the farm, his parents planted more than 10,000 trees and shrubs across the ranch to provide windbreak protection and wildlife habitat. Also, they built a waterfowl pond to attract migratory ducks and geese on the High Plains Flyway and installed four guzzlers to provide drinking water for wildlife.

To share their commitment to conservation and land stewardship, the family hosts several field days and participates in multiple ranch tours and organizations, such as Ranching for Profit or Young Adults and No-Till on the Plains.

“We’ve found drought trumps all the best management decisions in the world,” Pribbeno explains. “But, we’re still productive. Not everything works every year, and we don’t mind talking about it.” ///



Recent Farmland Sales



IOWA, Wapello County. Two tracts of farmland totaling about 159 acres sold at auction for \$1.32 million. Average tract prices ranged from \$6,000 per acre to \$11,400 per acre. Average for the entire acreage was \$8,302. Known locally as the Phyllis M. Bottger farm, the property included cropland, pasture and timber. Farm sold free and clear for the 2024 season. **Contact:** Rick Shafer, Sullivan Auctioneers; sold@ sullivanauctioneers.com, 844-847-2161 www.sullivanauctioneers.com

KANSAS, Norton County. A 595-acre property, including cropland, grass and creek bottom, sold in four tracts for \$1.7 million. Tract prices ranged from an average of \$2,200 to \$4,300 per acre. Average per-acre price for the property was \$2,857. Buyer received the landowner's one-third share of the 2024 wheat crop and was to reimburse seller for landowner's one-third share of fertilizer expense. All mineral rights were intact. The property consisted of about 540 cropland acres and 53 grassland acres. Bases were recorded in wheat and corn. **Contact:** Donald Hazlett, Farm and Ranch Realty Inc.; fr@frmail.com, 800-247-7863 www.farmandranchrealty.com

KENTUCKY, Daviess County. Six tracts totaling about 213.65 acres were sold as part of an IRS 1031 like-kind exchange at an agreed price of \$5 million. The price per acre averaged \$23,403. The land was all cropland except for 6 acres of hill grassland. It had road frontage and close proximity to a metro area. About 160 acres were in a floodplain. **Contact:** David Hawes, Kurtz Auction and Realty Co.; david@kurtzauction.com, 800-264-1204 www.kurtzauction.com

MICHIGAN, Saginaw County. Three tracts of farmland totaling 120 acres sold at auction for \$856,000. Average price per acre was \$7,133. The property included cropland, timber and outbuildings. Bases were held in corn and soybeans. The property was tiled and well-drained with easy farm access off of a paved highway. **Contact:** Steve Herr, Farmers National Co.; SHerr@farmersnational.com, 810-569-5638 www.fncrealestate.com

NORTH CAROLINA, Surry County. A former tobacco farm of 211 acres sold at auction for \$1.625 million. Of the total, 140 acres were in cropland.

Average price per acre was \$7,701. The farm is gently rolling with natural ponds and streams. Recent crops were vegetables, but the land is suited to soybean or corn production. **Contact:** B. Mark Rogers, Rogers Realty and Auction Co. Inc.; bmr Rogers@ rogersrealty.com, 336-789-2926 www.rogersauctiongroup.com

NORTH DAKOTA, Pembina County. In a record-breaking auction, a 320-acre farm sold to a single buyer for \$5.6 million. Average price per acre was \$17,500. The farm was described as having some of the best cropland in the Red River Valley. Soils were nearly all Class II and III loams, with a Soil Productivity Index in the 80s and 90s. The owners had a history of a strong cropping rotation, including potatoes, sugar beets, corn, soybeans, wheat, barley and more. The property was sold subject to a 2024 crop lease, with the buyer receiving the rent. **Contact:** Kevin Pifer, Pifer's Land Auctions; kpifer@pifers.com, 701-238-5810 www.pifers.com

Sargent County. Farmland totaling 319 acres sold in two tracts for a total of \$2.45 million. Average per acre was \$7,680. The operation included bases in corn and soybeans. Soils were described as highly productive Class II and III, with a Soil Productivity Index averaging 82.1. The cropland was subject to a 2024 lease, with the payment assigned to the buyer. **Contact:** Steve Link, Pifer's Land Auctions; stlink@pifers.com, 701-361-9985 www.pifers.com

These sales figures are provided by the sources and may not be exact because of rounding.

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Blurred Biologicals

Products have potential to enhance crop production, but uncertainty exists.

> By **Gil Gullickson**

Larkin Martin was puzzled.

The Courtland, Alabama, farmer applied an in-furrow biological product called StrongSoil at a 5-gallon-per-acre rate in a corn field with highly variable soils. She had an objective third-party analyst use a statistical method called spatial analysis to compare check areas adjacent to treated areas.

One field area using this side-by-side comparison shows the dilemma that exists in evaluating these products. In the analysis, the treated areas showed a positive per-acre return on investment (ROI) three times: \$7.58, \$65.34 and \$76.19. However, the check had a better per-acre ROI three times: \$37.25, \$23.27 and \$2.81.

“All findings used a statistically sound method,” she says. Martin is still positive on overall product performance. However, the analysis showed different conclusions existed among individual field areas. These differences rooted in her farm’s variable soils makes Martin wary of claims made by companies selling biological-based products.

“Promotional claims can be valid or complete fiction,” she says. “It is all about how you look at the data.”

Global sales of biologicals will grow by **335%** by 2035.

> WHY THEY'RE BOOMING

Biologicals certainly aren’t new to agriculture. Farmers have used soybean inoculants featuring rhizobia bacteria, for example, for years. What’s new is the flood of firms selling biological-based products to farmers. Corteva officials note the 2021 global biological market size of \$9 billion will grow to \$30 billion by 2035.

Several factors are driving this growth, explains Amy O’Shea, Certis Biologicals CEO.

► **THEY REFLECT CONSUMER SENTIMENT**

“We’re seeing increased consumer perceptions and awareness of how food is processed and brought to market, and it’s reaching all the way back to the farm,” she says. “There’s also a changing regulatory landscape of major European health ministries and the U.S. EPA moving to reduce or remove registrations for synthetic chemistries.”

► **THEY’RE POPULAR**

Thirty-seven percent of U.S. row crops have some type of biological product applied to them, O’Shea continues.

► **THEY’RE AFFORDABLE**

Prices range around \$6 per acre for inoculants all the way up to \$20 per acre for N-fixation products, she adds. “This is within the reasonable range for adoption in row crops.”

► **THEY MAKE ENVIRONMENTAL SENSE**

“The potential to use natural systems is a wonderful advance over chemistries that we need to combat pests but also have peripheral negative effects,” Martin says.

You’ll likely see biologicals teamed with future seed purchases. “Biological bundles may someday be

□ *The Italian company Valagro, acquired by Syngenta in 2020, has been a pioneer in developing, testing and marketing biostimulants and specialty nutrients to naturally increase the quality and quantity of crops.*



PAMELA SMITH



PAMELA SMITH

□ *Larkin Martin is testing biologicals in soybeans on her Alabama farm to judge for herself if the products live up to their claims.*



GIL GULLICKSON

part of seed packages,” says Marcus Meadows-Smith, CEO of BioConsortia.

Climate change is also impacting biological product development. “Pest shift triggered by climate change calls for new modes of action in pest control and better resistance-management tools, which is a key driver for biocontrol growth,” explains Corey Huck, global head at strategic partnership for biologicals at Syngenta.

“With climate change, plant resilience to abiotic factors such as drought and heat tolerance becomes more and more important, hence the need for biostimulants,” he adds.

Two main biological classes exist. Biostimulants include seed treatments, in-furrow products and foliar sprays that run the gamut from capturing atmospheric nitrogen (N) to easing plant stress to boosting yields. ►

Biopesticides target disease and insects, just as synthetic chemistries do. Biologicals differ from synthetic chemicals in that they are made from living or naturally occurring materials.

Like synthetic chemistries, biologicals have a federal regulatory framework to help ensure safety and efficacy, O’Shea explains. However, it’s not as uniform as is the process for synthetic chemistries, particularly when it comes to biostimulants. Biostimulants are regulated only at the state level, which translates into differences between states. Steps are being taken to harmonize this process, she adds.

> DATA CONFUSION

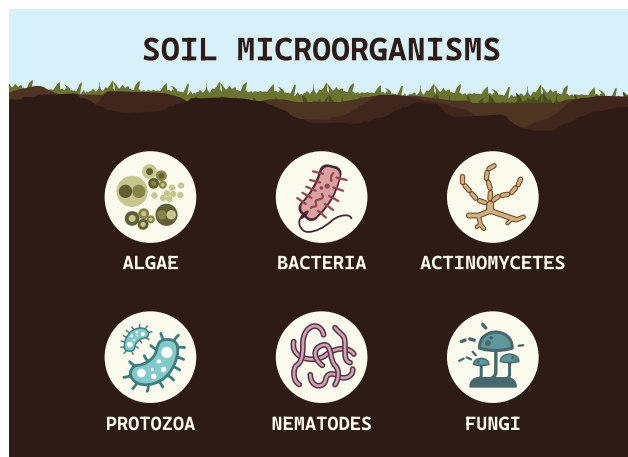
Yet, as Martin discovered, the reams of biological product data often spur confusion.

Remember that no agricultural product works all the time, says Mike Miille, a Fellow with Ginkgo Bioworks, a biotech firm that partners with Bayer and other companies.

“Even under the best kinds of circumstances, negative results can occur,” he explains.

Soil temperature can certainly cause less-than-ideal results from biological products. Syngenta’s Huck points out that microbial activity generally increases with temperature up to a maximum that’s unique to each microbial strain.

“At high temperatures, some microbes will die,” he says. “Even in seemingly dry soils, soil bacteria live >



GETTY IMAGES

Insurance Policy



PAMELA SMITH

Fred Below

Fred Below admits that agricultural biological products give here-and-there, maybe once-in-a-while results. Still, the University of Illinois crop physiologist believes assessing products in the correct context provides a better summary of their merits.

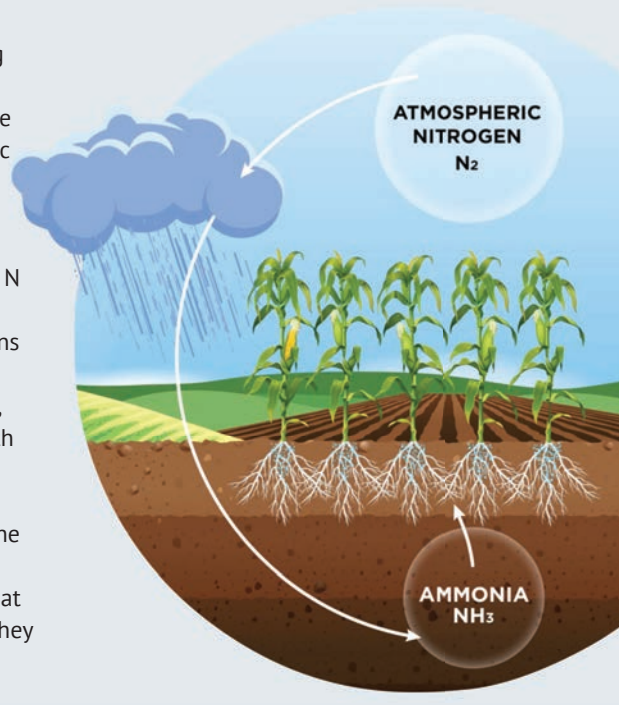
For example, spring-applied nitrification inhibitors don’t work as well compared to fall applications, since the time frame to protect against N losses is less. Rather than boosting yields or cutting commercial N applications, Below believes N-fixing biologicals should be judged on if they can pull atmospheric N inside plants.

In corn’s case, a critical time to supply N is between the V8 and VT stages. Below’s studies indicate N-fixing biologicals can draw 25 pounds of atmospheric N during this time frame.

Corn’s N sources vary between years. In some years, corn gleans more N from soil mineralization than fertilizer. In others, corn obtains more from commercial fertilizers than from the soil. And, in some years, corn could benefit from an N boost outside of both sources, such as from N-fixing biologicals.

“It’s an insurance policy,” he says.

Larkin Martin agrees. “Your product may be valuable 50% of the time and then priced accordingly,” says the Courtland, Alabama, farmer. “You will sell more that way to someone who has a crop at risk and needs a safety net rather than telling them every time they apply the product it will work.”



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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on their fields.

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on water films that coat soil particles. As soils dry, microbial activity slows, and many species go dormant or employ other strategies, including spore formation, to survive until conditions improve.

“But, the enzymes and metabolites that they release into the soil may continue to function and support plants as the soils dry,” Huck points out. “Dry soils are stressful to plants and microbes alike, but building soil health can help improve its ability to adsorb and retain moisture, even in elevated temperatures.”

Field and soil variability complicate accurate data generation. “In so many cases, experiments are set up without enough replication and not going across different types of soil and other variables,” Miille says. “That lack of understanding can be used to a company’s advantage or disadvantage to make its point.”

One independent study that ran counter to the claims of companies was unveiled in April 2023 from scientists from 10 Midwestern states that evaluated four N-fixing products from four companies. They included:

- > **Azotic Envita**
- > **Corteva Utrisha N**
- > **Pivot Bio Proven and Proven40**
- > **TerraMax MicroAZ-ST**

Researchers applied products either as foliar-applied, in impregnated urea, in-furrow or as a seed treatment. Most trials occurred in corn, but products

David Franzen participated in a study of N-fixing biological products that he says showed disappointing results.



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1 cup of soil contains 9 billion microbes.

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were also tested in spring wheat, sugar beets and canola. Scientists found a significant yield increase occurred only in two out of 61 sites.

“We all hoped these products would do something,” says Dave Franzen, North Dakota State University (NDSU) Extension soil scientist. But, in the study, nearly all products did not deliver as advertised, he adds.

The companies disagree with the findings. Pivot Bio officials say yield is just one way to measure effectiveness. Reducing N rates while maintaining yield parity is another, which the studies did not show, they say.

Others say label instructions were not followed. “Our product was used in only one location and used off-label rates,” says Doug Kremer, TerraMax CEO.

Azotic’s Envita product works best when applied on a foliar basis rather than when used in-furrow as in the study, says Tom Tregunno, Azotic Technologies director of commercialization.

Product results can also hinge on how products are applied, Corteva officials agree. In Utrisha N’s case, Corteva officials say its research trials support recommendations for applying it during early morning on healthy crops free of poor nutrition or other abiotic or biotic stressors, and within current N programs.

Franzen defends the study’s methods. “In the university setting, we give it our best shot to follow the label and then report the results,” he says. >

GETTY IMAGES

Scientific Discovery Stuns Doctors

Biblical Bush Relieves Joint Discomfort in as Little as 5 Days

Legendary “special herb” gives new life to old joints without clobbering you. So safe you can take it every day without worry.

According to the Centers for Disease Control and Prevention, more than 54 million Americans are suffering from joint discomfort.

This epidemic rise in aching joints has led to a search for alternative treatments—as many sufferers want relief without the harmful side effects of conventional “solutions.”

Leading the way from nature’s pharmacy is the new “King of Oils” that pioneering Florida MD and anti-aging specialist Dr. Al Sears calls “the most significant breakthrough I’ve ever found for easing joint discomfort.”

Biblical scholars treasured this “holy oil.” Ancient healers valued it more than gold for its medicinal properties. Marco Polo prized it as he blazed the Silk Road. And Ayurvedic practitioners, to this day, rely on it for healing and detoxification.

Yet what really caught Dr. Sears’ attention is how modern medical findings now prove this “King of Oils” can powerfully...

Deactivate 400 Agony-Causing Genes

If you want genuine, long-lasting relief for joint discomfort, you must address inflammation. Too much inflammation will wreak havoc on joints, break down cartilage and cause unending discomfort. This is why so many natural joint relief solutions try to stop one of the main inflammatory genes called COX-2.

But the truth is, there are hundreds of agony-causing genes like COX-2, 5-LOX, iNOS, TNK, Interleukin 1,6,8 and many more—and stopping just one of them won’t give you all the relief you need.

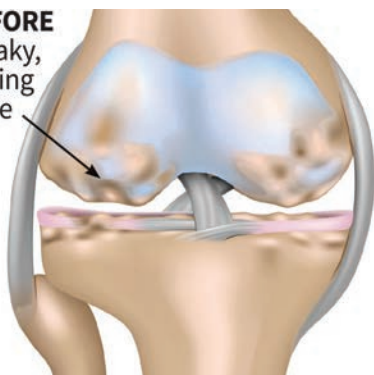
Doctors and scientists now confirm the “King of Oils”—Indian Frankincense—deactivates not one but 400 agony-causing genes. It does so by shutting down the inflammation command center called Nuclear Factor Kappa Beta.

NK-Kappa B is like a switch that can turn 400 inflammatory genes “on” or “off.” A study in Journal of Food Lipids reports that Indian Frankincense powerfully deactivates NF-Kappa B. This journal adds that Indian Frankincense is “so powerful it shuts down the pathway triggering aching joints.”

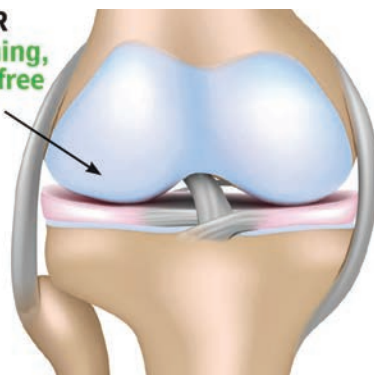
Relief That’s 10 Times Faster... and in Just 5 Days

Many joint sufferers prefer natural solutions but say they work too slowly. Take the best-seller glucosamine. Good as it is, the National

BEFORE
Creaky,
aching
knee



AFTER
Soothing,
ache-free
knee



The active ingredient in Mobilify soothes aching joints in as little as 5 days

Institutes of Health reports that glucosamine takes as long as eight weeks to work.

Yet in a study published in the International Journal of Medical Sciences, 60 patients with stiff knees took 100 mg of Indian Frankincense or a placebo daily for 30 days. Remarkably, Indian Frankincense “significantly improved joint function and relieved discomfort in as early as five days.” That’s relief that is 10 times faster than glucosamine.

78% Better Relief Than the Most Popular Joint Solution

In another study, people suffering from discomfort took a formula containing Indian Frankincense and another natural substance or a popular man-made joint solution every day for 12 weeks.

The results? Stunning! At the end of the study, 64% of those taking the Indian Frankincense formula saw their joint discomfort go from moderate or severe to mild or no discomfort. Only 28% of those taking the placebo got the relief they wanted. So Indian Frankincense delivered relief at a 78% better clip than the popular man-made formula.

In addition, in a randomized, double blind, placebo controlled study, patients suffering from knee discomfort took Indian Frankincense or a placebo daily for eight weeks. Then the groups switched and got the opposite intervention. Every one of the patients taking Indian Frankincense got relief. That’s a 100% success rate—numbers unseen by typical solutions.

In addition, BMJ (formerly the British Medical Journal) reports that Indian Frankincense is safe for joint relief — so safe and natural you

can take it every day.

Because of clinically proven results like this, Dr. Sears has made Indian Frankincense the centerpiece of a new natural joint relief formula called **Mobilify**.

Great Results for Knees, Hips, Shoulders and Joints

Joni D. says, “**Mobilify** really helps with soreness, stiffness and mild temporary pain. The day after taking it, I was completely back to normal—so fast.” Shirley M. adds, “Two weeks after taking **Mobilify**, I had no knee discomfort and could go up and down the staircase.” Larry M. says, “After a week and a half of taking **Mobilify**, the discomfort, stiffness and minor aches went away... it’s almost like being reborn.” And avid golfer Dennis H. says, “I can attest to **Mobilify** easing discomfort to enable me to pursue my golfing days. Definitely one pill that works for me out of the many I have tried.”

How to Get Mobilify

To secure the hot, new **Mobilify** formula, buyers should contact the Sears Health Hotline at **1-800-330-1217** TODAY. “It’s not available in retail stores yet,” says Dr. Sears. “The Hotline allows us to ship directly to the customer.” Dr. Sears feels so strongly about **Mobilify**, all orders are backed by a 100% money-back guarantee. “Just send me back the bottle and any unused product within 90 days from purchase date, and I’ll send you all your money back.”

Use Promo Code **PFMB124** when you call to secure your supply of **Mobilify**. Lines are frequently busy and due to heightened demand, supplies are limited. To secure your supply today, call **1-800-330-1217**.

> NOT YOUR DAD'S BIOLOGICALS

The relative newness of the biological space also spurs inconsistent results when compared to long-used agronomic inputs, Ginkgo's Miille explains.

"We are still at the early stages of having biological and microbial solutions that match the performance and consistency that chemicals and traits deliver," he says. "This doesn't mean we won't get there, but we have to be honest about what the current state is."

Today's biologicals have come a long way in recent decades. One early knock against them is because they are a living and breathing organism, one mishandling misstep can kill them.

"Years ago, products were frozen and had to be defrosted and mixed in a slurry until they got into a [implement] tank," Certis' O'Shea says. "Now, they are reformulated and can be as ready to go as a synthetic chemistry product."

Some microbial packages also are gene-edited, giving them an edge over native ones, says Dan Poston, Pivot Bio vice president of field research and development. "Native N-fixing microbes can be repressed by nitrogen in the soil," he says. "Ours are edited to be actively fixing N in the presence of synthetic N."

Adding microbials to a sea of soil teeming with native microbes can also be akin to dropping a troop of Girl Scouts into the Amazon and expecting them to survive and thrive. Just one cup of soil contains 9 billion microbes, some of which can quickly gobble up any invaders.

However, firms like Azotic stress their product works its way inside plant leaf and cells, and not in the soil. Officials for BioConsortia, Pivot Bio and other firms add their products colonize roots with microbes where they're protected from hostile soil microbes.

"Root colonization is what helps these products from getting eaten up in the soil," BioConsortia's Meadows-Smith says.

Like any other agronomic input, correct placement is key. "We already have an active biological system with cover crops and no-till," says Brian Hora, an Ainsworth, Iowa, farmer. "We've had good luck with some [biological products] that aren't native to our soils, such as ones from seaweed. Maybe it's because we are introducing something different to our soils."

> WHAT TO CONSIDER?

When using biologicals, here are some recommendations from farmers and industry and university experts.

► Brace yourself for unpredictability. "Fertilizer responses are predictable," says Dan Kaiser, a University of Minnesota Extension soil specialist. "Biologicals are not."

► Aim biologicals where they have the best chance of agronomic success. "We see responses on corn where it's N-starved," he says.

► Biologicals are not an all-or-nothing approach. "We look at the role biologicals can play in a rotation with synthetic chemistries," O'Shea says. "Using them in rotation or in a combined product can help forestall resistance in all cases."

► Ask salespeople how their products work. For example, Bt bioinsecticides kill lepidopteran insects by releasing a Cry protein into the insect's gut, Miille says. "We can actually enhance it and optimize the Cry protein, because we know that is how the bioinsecticide works." That's not possible if the mode of action is not known, he adds.

► Be skeptical of products tested only in the lab. "You can have a product work under lab conditions and then test the same product under field conditions and find there is no difference," Alabama farmer Martin says.

► Don't expect biologicals to work agronomic miracles. "Biological products won't fix soil pH problems," says Trent Newell, a Pattern Ag agronomist.

► Test products on your farm first before committing to larger acreages. "Farmers can do this with today's GPS and yield monitors," NDSU's Franzen says.

"It's a lot of work, but evaluating performance in your own soil can pay dividends," TerraMax's Kremer adds.

Despite her concerns about product inconsistency in variable soils, Martin hopes biologicals will find a place on her family's farm. "We live in an older agricultural area, and our soils have been degraded by erosion and tillage for centuries," she says. "These products have potential to improve our soil health, along with no-till and cover crops." ///



GILLUCKSON

► Iowa farmer Brian Hora theorizes introducing organisms not native to his soils have helped him to see positive results from applying biological products.



New Frontiers of Family Business

Owners of family farms and ranches often have a long and storied business history. When the land was first acquired, or when a family set out to homestead or move to a different location, that purchase or physical move represented a new frontier for the family. It was the initiation of a new direction. It represented a new strategy. It involved changing where they were or what they did in hope of a better future.

Similar to those defining points of family business history, there are choices today that represent new frontiers for the company. These frontiers represent changes to your business and to your thinking. Consider the following ideas as you contemplate the future.

Diversification. The idea of business diversification is not new, and when I mention the idea, the common argument I hear is, “Stay with what you know.” I remind the family members, however, that what they know stretches far beyond simply farming and ranching in their particular geography. Land management, real estate analysis, crop production, animal care and nutrition, organizing people and equipment, financial acumen and risk management are all skills that can be utilized beyond your current application.

For example, some families have purchased farms or ranches in other geographic areas to mitigate weather risk, while others do so to utilize the skills of great employees, keeping them committed to the family. Some have used their negotiation skills to purchase or develop commercial or residential real estate. Other families have started or bought a business they know something about because of a long vendor relationship, like a grain elevator, seed dealership, tire shop, sprinkler business, construction company or input supplier.

Through diversification, these families have generated a new stream of business income, provided an opportunity to bring a family member back to the operation or lessened their concentration of risk in a particular place or commodity. And, they often started with a small purchase or small investment, something they could afford to lose if it didn't work out.



GETTY IMAGES

Non-Family Ownership. As fewer family members return to the farm, passing the farm to the next generation becomes more challenging. Even when there are family members present, they are not always qualified to lead the company.

In response, some families begin exploring the involvement of non-family members as owners in, and successors to, the traditional family-owned business. Non-family members might buy into the operating company, purchase equipment in the business or lease land from the family. In some cases, non-family employees have been sold company shares at a discount, or they have earned ownership through sweat equity. These family-owned businesses have realized that continuing their legacy involves people beyond their immediate family.

Merging Operations. Finally, as agriculture industry consolidation continues, and farms become larger, the smaller farms producing a commodity crop find it harder to compete for labor and to manage rising costs. Instead of selling out, however, some smaller and medium-sized farms are merging with larger operations or combining with other similar-sized farms to achieve greater efficiencies and scale. By combining, an exiting farm can often better manage the income tax implications of a transition, while receiving value for their established base of rented ground. It takes planning with qualified professionals, but the value to both sides of a merger can be significant.

The concept of a frontier, when applied to family business, can represent new geographies as well as new ways of doing business. Consider whether your next frontier might include diversifying your asset base, bringing non-family members into ownership or even merging your operation with a like-minded company. In doing so, your legacy might last longer than you think. ///



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

Beat The RUST

These tips can help remove and protect equipment from corrosion.



Anyone who works with exposed ferrous metal (iron or steel) knows it's going to rust. All it takes is metal exposure to oxygen or water.

You may want to remove rust and spare the metal. There are several questions to consider first, says Mike Fowler, application specialist at Kano Laboratories, based in Nashville, Tennessee.

- > Has the part been structurally weakened?
- > Is the surface so pitted that it's impractical to apply coatings?
- > What methods are available for rust removal?

Rust must be stopped and removed before the paint process begins. For lightly rusted equipment, consider brushing on a rust remover. Following all safety protocols, the product will remove light surface rust. The now rust-free surface needs to be thoroughly rinsed with water and dried with a cloth. After treatment, consider applying a protective coating.

Phosphoric acid is an effective and efficient rust-removal agent. It cleans the iron or steel parts by chemically reacting with the rust and converting it to water-soluble components. These components remain in the liquid solution, which is easily washed away, leaving the iron or steel surface clean and ready for use or for application of any type of coating to prevent further rust formation. Kano Laboratories developed a product called Exrust, whose active ingredient is phosphoric acid, to penetrate and chemically react with iron oxide, quickly removing it.

> SOUND ADVICE

Fowler offers these suggestions on using a rust remover.

- > **Performance.** Be sure you are getting a rust remover

that dissolves the rust away rather than a rust converter, which just changes the rust to a more stable layer of iron oxide. These layers may inhibit further corrosion and may be suitable for some coatings and linings, but the buildup may interfere with moving mechanisms, be incompatible with some coatings and linings, and leave a visually unpleasant roughness.

- > **Ease of Use.** In choosing the right rust remover, some products work best as a soak, and some are designed with a jelly-like consistency to be applied to surfaces that are not capable of immersion. The soaks are most efficient and fastest when the entire surface to be cleaned can be immersed in the solution. Sometimes doing large parts takes some creativity to get the whole part immersed at one time. When using gels or soaks on surfaces that can't be completely immersed,

the cleaning process may be much slower, because the amount of rust dissolved is proportional to the amount of active ingredient in contact with the surface.

- > **Safety.** The product label and safety data sheet (SDS) should give clear directions for proper use, including personal protection equipment. Research the product to guarantee that it's compatible with the material being cleaned. Know whether it will damage the base metal or paint, or mar the finish of the component that is being cleaned. In rust removers, there is a certain performance trade-off between acid-based

products that have more inherent safety risks than chelating agents that are safer for the user. A chelator is a molecule that attaches to metal ions.

- > **Speed/Efficiency.** Before choosing a rust remover, it's beneficial to identify the process by which the rust is removed. Acid-based products' speed of performance will be a function of the type of acid in the rust remover.

Chelating agents tend to be a little slower than strong acids but still faster than weaker acids such as vinegar.

- > **Damage to Base Metal.** Those who want to get rid of rust in a hurry may use strong acids like muriatic acid (dilute hydrochloric acid) or sulfuric acid, but these will dissolve the base metal as readily as the rust. Great care is required lest the part you are trying to clean is damaged beyond use. Chelating agents will not harm the base metal but may not be as fast or thorough enough. A good middle ground is a phosphoric acid-based product that, properly designed, will provide quick dissolving of the rust with no risk of base metal damage. ///



PHOTOS: KANO LABORATORIES



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safer and healthier for all children and their communities.*

Get Trough Space Just Right



BECKY MILLS

When we feed our cows, one stands back and won't go to the trough. She is losing weight. I'm concerned she won't breed back and her calf won't do well. What can I do in a case like this?

Dr. McMillan: Cows are social creatures, and some are shier than others. Some cows are bullies. This may be a shy cow, or there may be a bully or two in the herd that run her away from the trough. Or it may be a combination of these things.

To start, make sure there is adequate bunk or trough space. I have always arbitrarily set mine at 2 feet per cow. Weaned calves are fine with 16 to 18 inches per head. Of course, with troughs, both sides are counted. A 10-foot trough should accommodate up to 10 cows or 15 weaned calves using my spacing.

I've tried feeding cows like the one you describe separately in a bowl or pan. But, the other cows usually catch on pretty quickly to what's going on. I've had some success moving these shier cows to a group that is younger and smaller to help them acquire confidence before moving them back in with the mature cows.

I reached out to Behlen Manufacturing Co. for more insights on your question. Megan Naber, the marketing coordinator, provided these thoughts: "We have found that, on average, 4 to 5 head per side on our 11-foot metal feedbunk creates just enough competition that cattle really get after their feed without creating too much competition so that some more passive cattle are left without.

"There are lots of things that affect the spacing you will want to allocate per head, such as life stage," she continues. "Are these 5-weight stocker calves, or are they big mama cows with calves by their sides?"

"Our suggestion would be to observe them at feeding time. If you see a lot of pushing going on or cows standing back and not getting any feed, you will want to add more

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



bunks. A little competition is good, especially for those stocker calves that will eventually go to a feed lot. It teaches them to really get after the feed, which leads to better performance; but like most things, too much is not good either."

I had never really thought about competition being a positive, but in some cases, it clearly can be. Maybe other producers have some thoughts to share on what has worked for them.

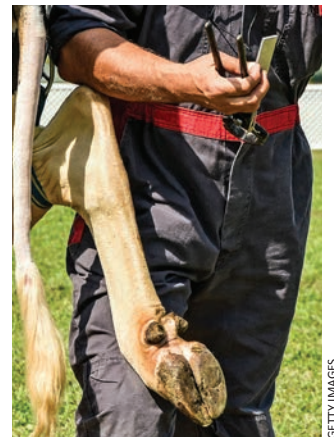
I have a bull that has been limping on a rear leg for about a month. I gave him antibiotics twice. Both times, he got better but went lame again. His outside claw is swollen, and there is red, nasty tissue at the heel. What do I need to do for him?

Dr. McMillan: First, let me stress it's always important to lift the foot and look before you give antibiotics. Not all lameness is due to foot rot.

We have found roofing nails, wire, rocks, puncture wounds and other objects in the sole of the foot or between the claws. Sole bruising, draining tracts or abscesses under the sole are common causes of lameness. Founder or laminitis, fractures of the small bones in the claw and sprains are other noninfectious causes of lameness. In many of these cases, antibiotics are just not indicated.

What you are describing sounds like an infection that started at the heel and worked its way under the sole. Alternatively, it may be an infection that started under the sole and worked its way out at the heel. In either case, infection is now trapped inside the claw. That is creating pain. In some cases, this pain can be extreme and lead to lameness.

If your veterinarian has a tilt table, it will make evaluation and treatment much easier. Treatment must focus on removing damaged sole tissue so the infection can drain. If only one claw is affected, a hoof block can be glued onto the unaffected claw. This lifts the affected claw, removing the source of pain. This is extremely important in the healing process. These types of cases require both antibiotics and pain medications. ///



GETTY IMAGES

97-Cent Natural Relief for Leg and Feet Burning, Tingling and Numbness That Doctors Never Tell You About

You don't have to suffer anymore. Doctors never tell you about these 7 natural herbs, yet millions of people in China have used them for relief of leg and feet problems for 3,000 years. In fact, they are guaranteed to relieve your problems and provide soothing comfort - or you pay nothing.

Mary Lentz of Plano, Texas suffered for over twenty years from leg and feet problems. Doctors prescribed one prescription drug after another. Then electrical stimulation. Then surgery. But after all these treatments - her legs and feet actually felt worse.

Mary was fed up with suffering. She took matters into her own hands. At wit's end, she discovered the best herbs for natural relief. She took them, and within just days, her leg and feet problems began to disappear. Now she walks her Golden Retriever Max every day (which she couldn't do before), works in her garden and regularly plays tennis with friends.

"If I kept listening to my doctors, I'd be a cripple today. I'd be in a wheelchair or in a nursing home.

I am so thankful for these remarkable herbs."

Leg and feet problems could have been almost like a death sentence for Mary - and a shame for her suffering family. It is a terrible way to live out what should be the best year of your life.

Neuropathy is like a wildfire. It starts with a small flame, but then quickly turns into a raging fire in your feet that never stops. Left alone or treated in a way that doesn't work, it can lead to constant suffering - or even one of the 86,000 Americans who need a limb amputated each



Proven Fast Natural Relief For:

- ✓ Blood Sugar Problems
- ✓ Varicose Veins
- ✓ Swollen Legs
- ✓ Spider Veins
- ✓ Aches & Weakness
- ✓ Many other leg & feet problems

year according to the National Institutes of Health.

At Last - You Don't Have To Suffer Anymore

Here's why you have these problems: Your arteries have weakened. Your arteries can't carry enough blood, nutrients and oxygen down to your legs and feet. This damages your nerves and causes your burning, tingling and numbness.

The 7 herbs in the pill NeuroFlo strengthen your arteries that carry blood, nutrients and oxygen to your feet and legs. It improves your circulation so oxygenated blood goes to the nerves and repairs them. This makes your nerves grow stronger so your pain fades away and your legs and feet feel much younger again.

Until now, scientists could not combine all these herbs into one pill without losing their full potency, but finally, they have succeeded.

Dr. Ryan Shelton, M.D. says "This is new and different. It works for people who've tried many other things before. It is natural with no side effects. Don't give up hope for your leg and feet pain, burning, tingling and numbing. This pill is working for countless people after other treatments have failed them." From word-of-mouth, over 30,000 doses of this Chinese miracle have already been sold in America.

Instead of letting their doctors control their health with no real relief, people are taking this natural approach. They are staying active and independent as they age - and creating a bright future they are excited about, instead of fearing. Now you too can enjoy your best years yet.

Conventional Treatments All Wrong

In America, drugs and other OTC formulas try to superficially suppress the symptoms. This may be going after the problem completely wrong. Traditional Chinese Medicine (TCM) believes nerve problems are largely caused by stagnant blood circulation. This causes your legs and feet NOT to get enough oxygen-rich,



These Chinese herbs provide fast relief of leg and feet tingling, burning and numbness. They do this by improving the flow of blood, nutrients and oxygen to your legs and feet to repair damaged nerves.

nutrient-rich blood they need to heal. The ingredients in NeuroFlo get this crucial blood flowing to your legs and feet like a fast-running river stream so they can feel better fast.

Want proof? To show how important oxygenated blood flow is, hold your breath. Hold it too long and you'll pass out. This is what's happening to your feet and legs now -- they are not getting the oxygenated blood flow they need to feel healthy.

Now you can get a good night's sleep - peaceful, restful sleep - with no pain, tingling, zinging, itching or zapping. Improve your balance and coordination. No side effects - safe to take with other medications. Enjoy your favorite activities and hobbies again. Be more active, have more fun, enjoy life more. Don't risk irreversible damage to your feet and hands. Don't get worse and wind up in the hospital or a nursing home.

Neuroflo is GUARANTEED to work great for you - or you PAY NOTHING with a 90-day unconditional money-back guarantee. It is NOT sold in stores or online. No prescription or doctor visit is required.

50% OFF FOR THE NEXT 10 DAYS

This is the official release of NeuroFlo for Progressive Farmer readers. Therefore, everyone who calls within the next 10 days will receive 50% OFF their first order. A toll-free hotline number has been set up for local readers to call for this 50% OFF savings. The number will be open starting at 7:00 am today and only for the next 10 days.

All you have to do is call **TOLL-FREE 1-877-322-9619** and provide the operator with the special 50% OFF discount approval code: **NEF158**.

Important: Due to Neuroflo's popularity and recent media exposure on ABC, CBS and FOX NEWS, phone lines are often busy. If you call and do not get through immediately, please be patient and call back. Those who miss the 10-day deadline for 50% OFF will have to pay more for Neuroflo.



"I had so much pain from burning nerves in my feet I could barely move ...but this makes it calm down so I can walk and sleep. I really love this stuff. Other pills didn't work. It stops the nerves from hurting so bad. It is amazing. NeuroFlo lets me move and sleep pain-free. It is wonderful."

- Katerina King-McCaustland, Murrieta, CA

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease. Results based upon averages. Models are used in all photos to protect privacy.

BECK'S COMMITMENT REWARDS: VALUE OR GIMMICK?

"It felt gimmicky until my Beck's dealer sat down and explained the terms of the agreement and the value it would bring to my operation. Once I understood that, signing an agreement was a no-brainer," said Beck's Missouri Customer Patrick Hines.

When it comes to Commitment Rewards, we've heard it all. "Just lower your seed cost!" "I don't need your toy catalog." "I refuse to drink your marketing Kool-Aid." "What a gimmick!"

Well, if you say it's a gimmick, then we say it's the most valuable gimmick in the industry. Here's why.

LEVERAGE BUYING POWER

Commitment Rewards is an equipment and financial tool that can provide your operation with a competitive advantage. The program is designed to help farmers leverage Beck's buying power to overcome obstacles like access to working capital and increasing interest rates.

IMPROVE YOUR CASH FLOW

Each year, Beck's works with industry-leading equipment providers, placing bulk orders upfront to offer farmers the peace of mind to secure the equipment they need when they need it. By leveraging our significant buying power, we pass along equipment discounts directly to growers that would not be attainable for a single operation.

Patrick Hines, a farmer in Memphis, MO, has been a customer of Beck's since 2021 and purchased a small amount of seed each year to try out on his farm. For 2024, he committed 100% of his acres to Beck's and worked with his area dealer, Aaron Brewer, to sign a multi-year Level 8 agreement with

Commitment Rewards after learning more about the value the program offered.

"Part of my decision to commit 100% of my seed order this year was due to Beck's flexibility in helping me put up a new equipment shed," said Hines. "After meeting with my dealer at Beck's Southern Illinois Field Show and seeing the terms of the agreement, I was shocked at how much cash Commitment Rewards would free up for me."

And while Patrick's Level 8 multi-year agreement didn't cover the entire cost, he is now paying back a minimal amount per year for three years (on an already highly discounted equipment shed) with ZERO interest, saving him roughly \$23,000. Plus, he can now write off the cost of that shed as an asset on his taxes that same year and boost his savings.

REDUCE YOUR INTEREST PAYMENTS

If you're looking for innovative ways to increase your working capital, Commitment Rewards provides an interest-free payback over time. You can use your points as a "down payment" on the equipment you need and pay the rest of the cost back to Beck's interest-free. Let's break it down.

Say you are considering signing a Level 3 multi-year agreement at a \$80,000 seed commitment. At this level, you would receive 50 total points to use, valued at \$18,750 (\$375 per point).

Despite not being fully sold on the program yet, you sit down with your Beck's dealer to review the equipment and tool options available. You flip to page 76, and your eyes go straight to the Thunder Creek 900 Fuel Tender.

You remember that yours broke down during planting, and you have not made it to the bank to take out a loan for a new one. Your dealer sees the spark in your eye, so he gets to work breaking down the math for you.

MULTI-YEAR COMMITMENT SCENARIOS: LEVEL 3	
\$80,000 Seed Commitment	50 Program Points Valued At \$18,750 (\$375 Per Point)
 <p>Thunder Creek 900 Fuel Tender \$22,500 Beck's Sales Price (60 points x \$375)</p>	
<p>\$22,500 (Fuel Tender Cost) - \$18,750 (Total Point Value) = \$3,750 (Remaining Cost to You)</p> <p>\$3,750 (Remaining Cost to You) / 3 (Multi-Year Commitment)</p> <p>= \$1,250 Final Per Year Cost to You at 0% Interest</p>	

While this sit-down scenario may seem far-fetched, we can assure you that the savings and interest-free payments are not.

It's not just about securing the tools you need for your operation you need at a heavily discounted, interest-free cost, it's about freeing up cash that wasn't previously available, providing you with the flexibility to purchase additional equipment that would not have been possible without the program.

Another Beck's customer, Jerry Steimel from Waterloo, Iowa, started off in the

program selecting a table saw. After learning more about the value and opportunity of the program, he then went on to sign two consecutive multi-year agreements for a grain cart and then a trailer. "When it was all said and done, I paid one-fifth of what the grain cart is worth and on the grain trailer, I didn't even have to pay one-third of what the value was," he said.

WHAT COULD A COMMITMENT REWARDS AGREEMENT LOOK LIKE FOR ME?

While a grain trailer or fuel tender might not be something you need on your farm, Beck's has options for every farmer and every acre size, ranging from large ag equipment, trucks and trailers, shop essentials, and even home and recreation. We've taken two great examples (to the right) of some of our most popular Commitment Rewards items and broken down the cost/savings for you.


HELPING FARMERS SUCCEED

Beck's chooses to put more money into farmers' pockets by passing along additional value through Commitment Rewards than they would get through a simple cash discount on seed. By expanding farmer's cash positions and freeing up working capital through Commitment Rewards, growers can secure the tools and equipment they need, create significant tax savings opportunities, and gain more value for their operations.

It's a value-adding, working capital-multiplying, cash-expanding return on your seed investment.

"IT FELT GIMMICKY UNTIL MY BECK'S DEALER SAT DOWN AND EXPLAINED THE TERMS OF THE AGREEMENT AND THE VALUE IT WOULD BRING TO MY OPERATION. ONCE I UNDERSTOOD THAT, SIGNING AN AGREEMENT WAS A NO-BRAINER."

- Patrick Hines, Beck's Missouri Customer

MULTI-YEAR COMMITMENT SCENARIOS: LEVEL 4	
\$120,000 Seed Commitment	80 Program Points Valued At \$30,000 (\$375 Per Point)
 <p>New Holland C337 Skid Steer \$73,500 Beck's Sales Price (196 points x \$375)</p>	
<p>\$73,500 (Skid Steer Cost) - \$30,000 (Total Point Value) = \$43,500 (Remaining Cost to You)</p> <p>\$43,500 (Remaining Cost to You) / 3 (Multi-Year Commitment) = \$14,500 Final Per Year Cost to You at 0% Interest</p>	

MULTI-YEAR COMMITMENT SCENARIOS: LEVEL 5	
\$200,000 Seed Commitment	145 Program Points Valued At \$54,375 (\$375 Per Point)
 <p>Chevrolet 2500 HD LTZ Diesel \$78,000* Beck's Sales Price (208 points x \$375) <small>*Includes local sales tax</small></p>	
<p>\$78,000 (Truck Cost) - \$54,375 (Total Point Value) = \$23,625 (Remaining Cost to You)</p> <p>\$23,625 (Remaining Cost to You) / 3 (Multi-Year Commitment) = \$7,875 Final Per Year Cost to You at 0% Interest</p>	



SCAN THE QR CODE TO LEARN MORE ABOUT BECK'S COMMITMENT REWARDS PROGRAM.

Twist and Shout

I have a 346 John Deere wire baler that I bought used that is giving me trouble. The previous owner told me that it came right out of the field, but before he put it up for sale, he welded the broken right needle near the tip and made sure the needle kept the same arch as the other needle.

The baler occasionally misses bales on the right side, and when it misses, I have never seen a tying system do what it does when it breaks bales. On the right side of the tying system, the cutter and holder hold and cut both strands of wires that are brought up by the needle rather than one wire. The twister hook grabs all three wires as it turns—the two that the needle brings up and the one that was held and crimped, and then released to be in the twist. This leaves three wires in the twist.

The “mechanical engineers” at the coffee shop say the roller in the needle must be bringing up three strands of wire rather than two strands because the wire in the roll is tangled. That is not the case. The wire runs from the wire box, through the wire guides and past the needles as a single strand. The dealer said the twister hook might be out of time. Nope, hook is in time. I have yelled at this baler, but it did not help. I give up! I am now a YouTube mechanic.

Steve: What you have going on here is a really rare opportunity that most have never seen (opportunity being the new corporate word for problem) and one that is difficult to diagnose. A twine baler can have a similar problem, but the twine disc can have two strands of twine in the twine disc.



STEVE THOMPSON

What is happening with your wire baler is that when the welder repaired the broken needle, he, no doubt, got the needle back in the same shape as the original, but I bet he strengthened the needle by building up the front side of the needle (see photo above). The bulge of weld in the front of the needle will occasionally allow the wire on the front side of the needle to slip out of the groove in the front of the needle. When it does, it falls into the cutter/holder with the other strand of wire on the back side of the needle that is correctly placed to be cut and held. Now, as the tying cycle begins, two strands are cut and released, and as the hook grabs them and the single wire that was released on the other side to be in the twist, you have three wires in the twist.

Reshape the groove to its original shape and depth in the front of the needle. This will leave the wire on the front of the needle far enough away when the twist is being made that the twister hook can't grab it, because the wire will now stay in the groove in the front of the needle and leave it “looped” out of the way of the twister hook.



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

Please include your phone number.

Hydraulic Oil and Roundup Don't Mix

I got an invitation from a tech to help with a problem (also called a customer satisfaction opportunity) on a John Deere 7410. At the ranch where the tractor was used, it seems that they stored the farm chemicals and the tractor fluids in the same storage area. There was confusion when the Roundup containers became mixed with the hydraulic oil. The jugs look the same. Contents appear to be the same color. Contents are about the same texture. But, that's about as far as it goes.

I don't know what all those big words mean on the label of Roundup, but I found out what they can do to the inside of a tractor. This tractor was like nothing I have ever seen. The transmission was a nasty, rusty sludge. All of the back end and PTO were dirty brown. The whole thing looked like it had been blasted with rusty, greasy, brown glue. Every place hydraulic oil went had the same look.

Every piece had to be disassembled and cleaned or replaced. The cost of this repair bill almost matched the value of the tractor. The owner now keeps his chemicals and oils separated. I have made changes around my place, too. ///

MULES TO MARVELS

The many uses for manure have driven manure-handling technology to increasingly sophisticated levels of design and technology. Benton Witt (right), Bear Creek Farms, Leonard, Texas, stands with a familiar “senior” spreader. Compare that to the MS400 (tandem axle, vertical beaters) from Meyer Manufacturing Corp. The box features a ½-inch-thick high-density solid poly floor and ¾-inch-thick solid poly sides. The Twin Twister Vertical Beater has a spread pattern of 30 to 40 feet in width. MS400 has a capacity of 486 bushels (heaped) and can be ordered with an optional scale. (Bonus points: Manufacturer of the Texas spreader and year—or decade?)



PHOTOS: STEVE THOMPSON

MULES TO MARVELS is an occasional feature comparing “yesteryear” technologies to today.

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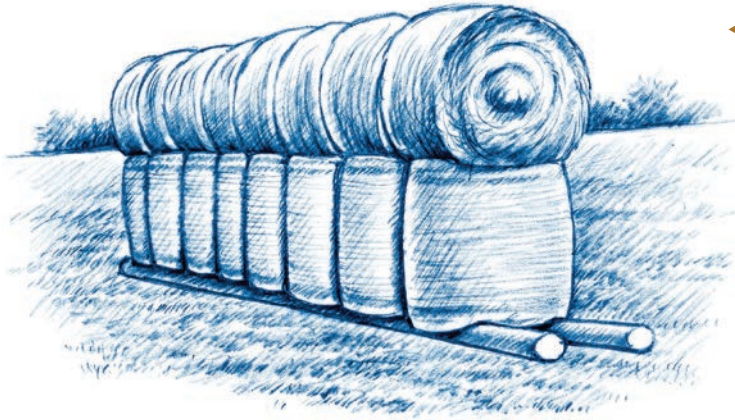


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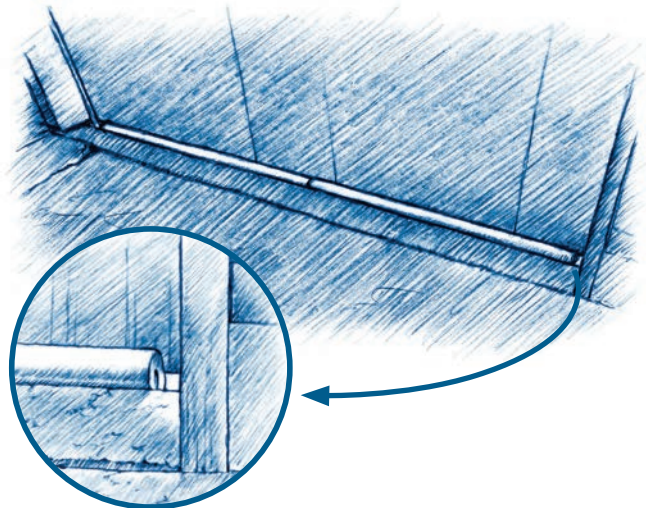


◀ BALE LIFT

Paul Milbradt, Belview, Minnesota, uses old telephone poles to give a lift to his round bales. He lies the poles parallel on the ground, spaced 4 feet apart, and stacks the bales on top of the poles by driving over them with his tractors. Milbradt loads and unloads from both ends of the stack. The poles keep the bales high and dry off the ground—and more. That extra space gives his cats access to a healthy supply of field mice.

NOODLE IN THE COLD ▶

Dan Huwe, Sebeka, Minnesota, stops cold winter drafts from coming under his shed doors with pool noodles. He pushes the noodles down into the space between the door and the shed floor. Huwe says the noodles are tough, can handle getting wet (of course, they are made for floating in the water) and are sturdy insulators against cold air and snow.



◀ PROTEIN TOW

Looking for a better way to handle 250-pound protein tubs, Lee Neely, Holcomb, Mississippi, built a sled that can be connected to the ball hitch of his ATV or truck. He built the sled frame out of scrap metal. The tub rides on old conveyor belting connected to the frame. Chain or cable works as a tow strap and includes a loop that fits easily over the hitch ball. Inventor tip: Neely fashioned triangular points for the front of the sled for easier towing over rough ground.

CASH FOR YOUR IDEAS: Share with us your project ideas, and we'll pay you \$400 upon publication. To submit a Handy Device, please send a complete explanation of your idea and clear photographs or detailed drawings. We'd like to see a video, too, but that's optional. If you've published your idea on social media (Twitter, Instagram, Facebook), send us the link. With each entry, include your name, address and telephone number. Send Handy Device entries to: dan.miller@dtm.com. Sorry, but we cannot acknowledge submissions or return photographs, drawings or documentation.

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PF0124





Bank Grass Grazing

Commonsense system plus smart brush control benefits cattle and wildlife.

Failure can be a pretty good teacher sometimes. David Crow says when he failed to make one kind of grazing system work on his Texas ranch, it led him to another. That approach became a highly productive, sustainable operation across 4,200 acres in Goliad County, known as Parks Ranch.

Crow, a first-generation rancher, bought the ranch in 2000. At that time, it was divided into two pastures. One contained a Savory Grazing system, developed using grazing guru Allan Savory's classic wagon-wheel design. It's an intensive rotational program with pie-shaped paddocks used worldwide.

"We tried to operate it, but we couldn't make it work," Crow explains. "There must have been 20 miles of temporary electric fence. We have a lot of wildlife, and the deer and wild hogs kept flipping the fence and shorting it out."

Add to that the challenge of only one water source, located in the middle of the setup. From there, cattle would only graze out so far, leaving large parts of paddocks ungrazed.

> MORE PADDOCKS, TRADITIONAL WIRE

Looking for options, Crow sat down with technicians at his local Natural Resources Conservation Service (NRCS) office. They drew plans for a simple, 10-paddock system covering the whole four-mile by two-mile ranch.

Each paddock was about 400 acres in size, fenced-in traditional barbed wire and had a lane running down



PHOTOS COURTESY OF INGBA

David Crow (left) and son, Matt, added paddocks and barbed wire to make their grazing program fit the operation.

the middle to working pens. Two herds, one fall-calving and one spring-calving, rotate through the paddocks with little effort or stress on cattle or people.

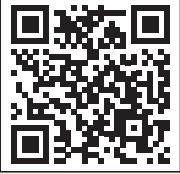
"It is about as easy and simple as you can get," says Matt Crow, David's son and ranch partner.

"The cattle get to know the siren and cake buggy pretty fast. We go back through on horseback and clean out the stragglers."

David adds: "We can gather a herd from anywhere on the ranch and have them in the pens in an hour or hour and a half."

Even better, native grasses like big bluestem, little bluestem, yellow Indiangrass and Alamo switchgrass are

Watch the Video



<https://youtu.be/-yHumUIaIBE>

flourishing. “The rotation method has helped us avoid taking drastic measures during droughty times. It is like we’re banking grass,” David says.

Unlike the Savory system that came with the ranch, David says in this setup, cattle graze all forage in the paddocks. They manage grazing with water distribution. To make it work, they put in some 20 miles of fence, 15 miles of water lines and 20 troughs.

“The two different herds are grazing on two different pastures at any given time,” Matt explains. “By doing that, it allows us to rest eight pastures. That gives our grass a chance to recover. We feel the total time rested is more important than the total time grazed.” It’s often 3 to 3½ months before cattle rotate back to a grazed paddock.

> STOCKING RATES AND BRUSH CONTROL

Even with increased forage productivity, the Crows stock cautiously. One animal unit to 17 or 18 acres is the norm for ranches in this coastal prairie region.

The Crows stock higher, at around one animal unit to 14 acres.

“We could probably push it to one to eight if we wanted,” David says. But, while average rainfall is 32 to 34 inches, it often falls short of that.

The Crows give a lot of the credit for their productivity to the rotational-grazing system but stress that brush control is another big key to the ranch’s success. When the senior Crow bought the ranch, it had been leased out for grazing and hunting for 27 years.

“It hadn’t been abused, but it hadn’t really been managed either,” he says, adding that brush had completely taken over in places. Today, a fair amount of the ranch budget goes to brush control.

David says the surefire control method, an application of Remedy herbicide and diesel fuel, is one of the more costly ones. But, diesel is too expensive to pour on the ground. After a February 2022 wildfire burned 1,500 acres, mesquite exploded. That’s when the Crows hired >

“We’ve put in over 20 miles of fencing on this ranch. It’s created a grazing plan.”

—David Crow

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That's OK with David, who says he likes the mechanical method of control because of what he calls the "instant gratification" of watching a skid steer or a bulldozer take out invasive plants.

Weed and brush control are important not just for grazing but for more wildlife habitat.

> MORE WILDLIFE DIVERSITY

The increase in high-quality native forages that provide grazing for the cattle also help feed white-tailed deer and wild turkeys, and serve as quail nesting and brood habitat.

The ranchers' dual focus on cattle productivity and wildlife habitat resulted in cost-share agreements with the U.S. Fish and Wildlife Service, NRCS, the Texas Parks and Wildlife Department, and The Nature Conservancy.

"This is a great example of how private ownership can work with public entities," David explains. "I went into this thing very cautiously, but it has worked very well. Everybody had the same goals."

Their efforts also made Parks Ranch a National Cattlemen's Beef Association regional winner through its Environmental Stewardship Award Program. David appreciates the accolades, but he says for him, the real measures of success are the ranch's improved productivity and sustainability.

"This ranch is a great cattle ranch," he stresses. "It makes perfect sense to run cattle here. This is what this land was made for. It is not going to be a better golf course. It is not going to be a better shopping center. I hope Parks Ranch stays intact as a working ranch for generations to come."

Matt adds, "My Dad and I are always striving to make the land better. It's not only our job, it's our passion. We're doing our best to take care of this land for the next generation." ///



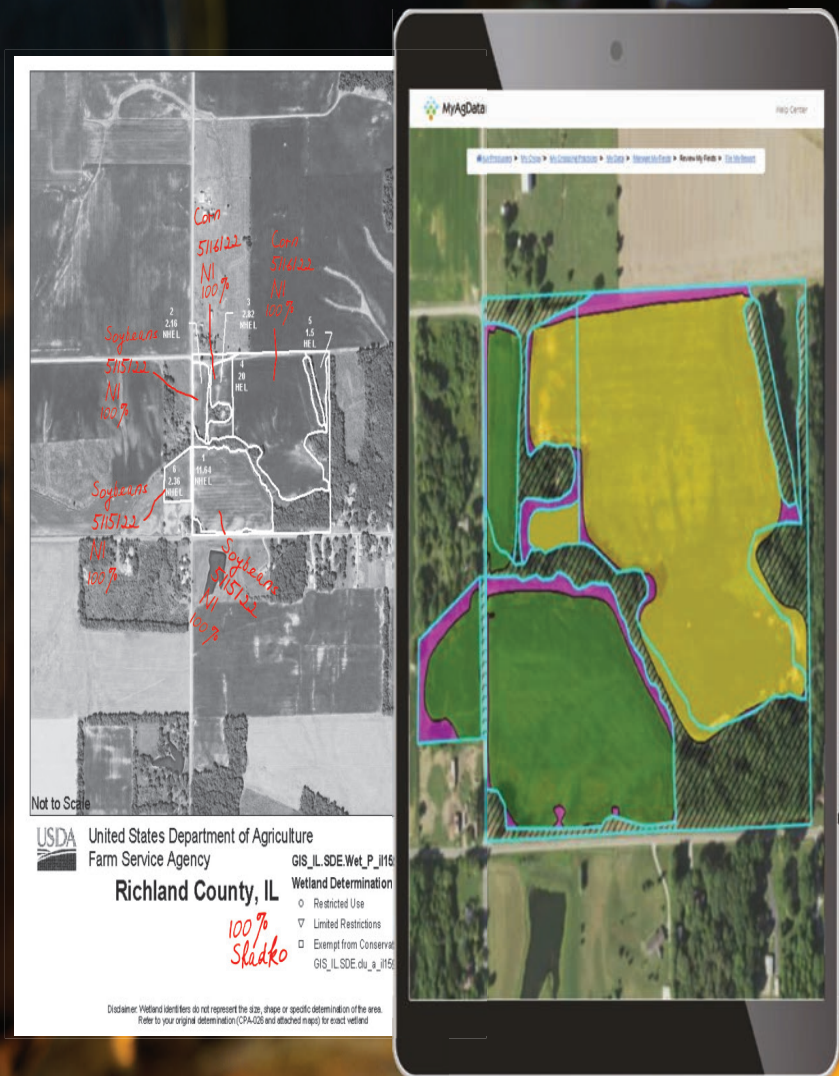
Brett Huegele (left) works with David Crow on forage management and brush control.

a crew to foliar-spray a mix of 1% Sendero with MSM 60 and a surfactant Inergy.

"They sprayed it so fast, they really got after it. It cheapened the process and knocked the brush back tremendously," David says.

Brett Huegele works with the Crows on forage management and brush control. "There is no silver bullet," Huegele says. "It needs to be a combination of mechanical and chemical control, prescribed burning and proper grazing management."

Electronic Acreage Reporting Is Important to Me



“I have always found the acreage reporting process to be painful and ripe for streamlining. It's 2023 and there must be a better way. I saw an ad in Progressive Farmer about MyAgData and electronic acreage reporting. This is absolutely worth a try.”

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To Diversify, Just Add Water

*A farm family's crops
mix extends into
the Chesapeake Bay.*

Steve Sturgis has pulled his pickup to the boat ramp at Cherrystone Aqua-Farms, in Cape Charles, Virginia, near the southern tip of the 70-mile-long peninsula that makes up the state's Eastern Shore. "We've lucked out, our guys are coming in right now," he says.

Sturgis had just been talking about the partnership he's been a part of since 1988 that farms clams on leased bottom of the Chesapeake Bay. A boat crew of four begins offloading bag after red-mesh bag of clams—as many as 100,000 this trip—onto a pallet held by a forklift. The clams are then driven into the processing facility 50 yards away for cleaning and sorting.

Like any livestock, the clams offer diversification in the operations run by Sturgis and his two sons, Kyle and Jarrett. Their 1,500-acre family farm has never shied away from trying products with potential profit. Surrounded on three sides by water, the eastern shore is geographically isolated yet gaining popularity as a vacation getaway.

"We've been discovered," says Steve of the tourism,

Kyle, Steve and Jarrett Sturgis grow lettuce in a greenhouse to diversify income (left). Employees bring in clams from Chesapeake Bay (below).



"but that ends up limiting your land base." As we drive, he points out 200 acres here and 600 acres there that have transitioned from farms to housing developments, golf courses or other businesses. One upside, though, is that many retired landowners (and some absentee owners) want their land farmed or have placed the property in conservation easements that require it remain in agriculture.

The result is that the Sturgises custom-farm for others. "If there are enough acres available, I'd travel 30 miles to custom-farm," Steve says. "But, we can usually do all we need nearby, though, because nobody wants to own a combine."

> DIVERSITY-DRIVEN

The family grows corn, wheat, soybeans and edible beans, along with sweet corn and clams. They raise greenhouse lettuce and do custom-farming. In a separate venture, Kyle and Jarrett grow several acres of pumpkins, squash and sweet corn. Jarrett also has a partnership with a non-family friend growing oysters in the Bay.

Steve Sturgis and a longtime partner lease about 20 acres of Chesapeake Bay bottom as C&S Seafood. Their multiple clam beds are each 12 feet by 60 feet, with up to 50,000 tiny baby clams, known as seeds, placed in the mud at the bottom of the bed. The clams are covered with a fine netting to prevent them from drifting and to protect them from predators like bullfish, rays and crabs. The clams will grow for the next 1½ to 2 years before being harvested.

At any given time, C&S Seafood has about 12 million clams growing in the bay. Each clam is worth 12 to 23 cents, depending on the market. For example, 12-cent clams mean the load they brought in that morning represents about \$12,000 gross income.

Clams work from a cash-flow standpoint because they are planted and harvested year-round. "Some days, we've had to break through ice to get to the beds," Steve explains. In addition, undersized clams sorted out at Cherrystone Aqua-Farms can be replanted in the bay to continue growing.

> OPEN TO OPPORTUNITIES

Steve, Kyle and Jarrett Sturgis don't hold too tight to preconceived notions about what they can and can't do.

"We're always open-minded, looking for new and better things to help us run more efficiently or be more profitable," says Jarrett, 32, who functions as operations manager—the machinery guy—for the farm. "Growing up, all I knew was clamming and farming," he says. "I'd come back on the boat at 9 or 10 a.m. and then work the farm. I loved playing in the dirt and playing outside." >

Several years ago, a retiring farmer asked Jarrett and Kyle if they wanted to take over his 4- to 5-acre pumpkin operation. They agreed, continuing the pumpkins along with various decorative squash. The brothers then incorporated sweet corn into the family operation. Prior to the pandemic, the family ran a small market store attached to a greenhouse (Kyle's idea) where they grew lettuce.

COVID caused them to close the store, and staffing issues have prevented them from reopening. The family had originally planned several greenhouses, but they haven't yet built beyond the solitary greenhouse.

Fortunately, they sell most of their pumpkins and sweet corn to the same wholesaler as their lettuce. The family also sells sweet corn to local individuals—the demand is high after several years of selling at the farmstand, and the Sturgises get telephone calls asking for it.

Both sons have a variety of work experiences. “Dad was adamant about us finding a job off the farm initially,” says Kyle, 35. He worked for nine years as an agronomist for Helena Agri-Enterprises before making the move back home to farm.

“I really wanted to come back and help Dad,” Kyle says. “Labor has always been an issue.” In addition to starting the greenhouse, Kyle also diversified: He

now works full time as a field service director and in product sales for Virginia Farm Bureau.

Jarrett and his non-family partner currently have half a million oysters growing in the bay—but the two of them do all the work themselves. Expansion in that realm would require another employee or two. As with clams, being able to harvest year-round helps with cash-flow.

> EYE TO THE FUTURE

In the next five to 10 years, Kyle envisions the possibility of adding grain storage to the operation, taking advantage of market shifts to get better premiums. That may or may not involve additional land becoming available.

“I don't want to take anything away from anyone else,” Kyle says, “but if something does become available, we'd like to be in the mix. But, there's only so many ways to slice a pie here on this little sliver of Virginia.”

Asked how he sees the operation changing over the next decade, Steve initially jokes: “I hope they are doing it and I'm not. I'm 63 years old.” More seriously, he says that growing up on the eastern shore “has been phenomenal” for himself and his children. “The fishing, hunting, camping and water is always nearby. I never wanted to talk the boys out of farming, because I love it.”

The sentiment seems mutual. ///



Clams are big business for Chad Ballard III, Cherrystone Aqua-Farms (left), and Steve Sturgis.

The Business of Bivalves

To hear Steve Sturgis talk, Cape Charles-based Cherrystone Aqua-Farms is solely responsible for the existing commercial clam industry along the east coast.

“Not hardly,” says Chad Ballard III, president and owner of Cherrystone. “My grandfather and father took work that had

been done at the academic level in regards to getting clams to spawn and adapted it for mass production.”

The Ballard family began in the shellfish business in 1895, gathering wild oysters and eventually clams, along the Virginia seaside and the rivers emptying into the Chesapeake Bay. By the 1950s and 1960s, disease, overfishing and water contamination in the bay were devastating the bivalve populations (oysters, clams and mussels). The Ballards actually closed their oyster business in the 1970s.

Not long after, though, Ballard's grandfather, Chad Ballard, was paying attention to work being done at the

Virginia Institute of Marine Science. The research found that clams could be coaxed to spawn in a controlled environment. They put that information to work.

“We trick them into spawning by mimicking water temperature, salinity and food sources in nature,” Ballard explains. “Our version of a honeymoon suite featuring champagne and Marvin Gaye on the stereo.” Even so, less than 1% of resulting clams produced survive the initial spawn in the hatchery. “We start with billions of seeds and end up with millions,” he says.

By the time the baby clams, or seeds, are 2 months old and about half the size of a dime, they are ready to be placed in beds on the bottom of the bay. Oysters and clams benefit the environment in that they consume algae produced by chemicals in the water and sequester carbon via their shells.

Cherrystone Aqua-Farms produces its own clams as well as oysters while contracting with another 15 growers (such as Sturgis) to grow as part of a cooperative. Sturgis provides the boat, labor and bay bottom leases. Cherrystone and its cooperative partners split the eventual sale price, whatever the number. “We aren't contracted to a certain price,” Ballard says. “That's difficult to do with a two-year grow-out.”

New Blood Flow Breakthrough Helps Men Enjoy Strong, Long-Lasting Intimacy – At Any Age

Men across America are raving about a newly enhanced potency supplement that helps achieve healthy blood flow on demand

After age 40, it's common knowledge that performance begins to decline in many men. However, a new, performance empowering pill is showing that any relatively healthy man can now enjoy long-lasting, and frequent intimacy – at any age.

This doctor-designed formula, created by leading anti-aging expert Dr. Al Sears, has already helped men overcome low and sinking libido -- and has recently undergone a potency-enhancing update -- with remarkable new results.

When the first pill -- **Primal Max Black** -- was first released, it quickly became a top-selling men's performance helper, promoting intimacy across America.

It worked by supporting healthy testosterone levels. However, Dr. Sears soon realized that this isn't the only challenge men face with performance. That's when he turned his attention to blood flow.

And this became **Primal Max Red**.

THIS PROVEN SOLUTION IS MORE MECHANICAL THAN HORMONAL

Truth is, once blood flow slows down for men, no matter how exciting it is, it won't be enough without the necessary amount...

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Luckily, a Nobel prize-winning scientist discovered the simple answer to help support performance strength and confidence -- by boosting vital blood flow --

and enhancing this essential performance function.

Using this landmark Nobel Prize as its basis, **Primal Max Red** enhanced healthy blood flow for untold millions of men around the world with the use of strong nitric oxide boosters.

While **Primal Max Black** helped maintain optimal testosterone, **Primal Max Red** tackles a lesser-known challenge.

Director, Al Sears MD, who has authored over 500 scientific papers and has appeared on more than 50 media outlets including ABC News, CNN, ESPN, Discovery, Lifetime, and many more say, *"Less than optimal blood flow can be part of a huge problem that affects a lot of men. And it needed to be addressed once and for all, so men would not dwell on it. Then, once we optimized it and had a great deal of success, we set out to see if we could do even better."*

The former formula had excellent results. However, new research showed that for even faster, anytime, anywhere results, increasing the dose of a key compound was needed.

So, one of the three nitric oxide boosters in the new **Primal Max Red**, L-Citrulline, was clinically boosted to 9000 mg, and the results were astounding. Which is no surprise considering that 5000 mg is considered a "normal amount" -- giving the new version nearly doubled the blood flow boosting power.

Men who had previously been unsure about their power and stamina were overjoyed to be back to their



A new discovery that increases nitric oxide availability was recently proven to boost blood flow 275% - resulting in improved performance.

old selves and to get and maintain a healthy bloodflow when they needed it.

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The best way to promote healthy blood flow throughout the body is with the use of **Primal Max Red**. By using it, when exciting signals leave the brain, blood flows much faster like it used to.

This critical action is how men across the country are enjoying full and satisfying performance at any age. No need to bother with testosterone-boosting shots, blue pills, or shady capsules that have no effect.

Primal Max Red can effectively promote healthy blood flow that most men can use for maximum intimacy. This is leading to more greater capacity and satisfaction, coupled with long-lasting performance.

"There was a time when men had little control when it came to boosting their blood flow," Dr. Sears said. "But science has come a long way in recent years. And now, with the creation of nitric oxide-boosting **Primal Max Red**,

men can perform better than ever, and enjoy intimacy at any age."

Now for men across America, it's much easier to stay at their performance peak as they get older.

HOW TO GET PRIMAL MAX RED (AND FREE PRIMAL MAX BLACK):

To secure free bottles of **Primal Max Black** and get the hot, new **Primal Max Red** formula, buyers should contact the Sears Health Hotline at **1-800-424-3607** TODAY. "It's not available in retail stores yet," says Dr. Sears. "The Hotline allows us to ship directly to the customer." Dr. Sears feels so strongly about **Primal Max**, all orders are backed by a 100% money-back guarantee. "Just send me back the bottle and any unused product within 90 days from purchase date, and I'll send you all your money back."

Call NOW at **1-800-424-3607** to secure your supply of **Primal Max Red** and free bottles of **Primal Max Black**. Use Promo Code **PPFMAX124** when you call. Lines are frequently busy, but all calls will be answered!

Comfort In a Bowl

Recipes and Photos By
Rachel Johnson
On Instagram
[@racheltherecipe](#)



DIRECTIONS

1. Heat a large pot over medium-high heat. Add butter and diced onion; cook 2 to 3 minutes or until softened. Add garlic; cook until fragrant (about 30 seconds).
2. Add chicken and potatoes; season with salt and pepper.
3. Add bay leaf, chicken broth and heavy cream; bring to a boil. Turn heat down to simmer; cook 20 to 30 minutes or until potatoes have broken down and chicken is cooked through.
4. Add mixed vegetables; cook until heated through (about 5 minutes).
5. Stir soup, breaking up potatoes to create more texture. Taste and adjust seasonings, if needed. Add more cream, if desired.

> PIECRUST CRACKERS

TOTAL TIME: 15 MINUTES

MAKES: 1 DOZEN CRACKERS

INGREDIENTS

- 1 large egg, beaten
- 1 sheet premade piecrust (such as Pillsbury)
- Salt and pepper
- Seasonings of choice

> CHICKEN POT PIE SOUP

As the cold days of winter press on, take solace in a warm bowl of soup and homemade crackers.

TOTAL TIME: 30 MINUTES

MAKES: 4-5 SERVINGS

INGREDIENTS

- 2 tablespoons unsalted butter
- 1 cup diced white or yellow onion
- 2 garlic cloves, minced
- 1 pound boneless, skinless chicken thighs, cut into small pieces
- 1 large Yukon Gold potato, cut into 1-inch pieces
- Salt and pepper to taste
- 1 bay leaf (optional)
- 2 cups chicken broth
- ½ cup heavy cream
- 1 cup mixed frozen vegetables

DIRECTIONS

1. Preheat oven to 350°F. Line a baking sheet with parchment paper.
2. Make an egg wash by beating the egg with a tablespoon of water.
3. Lay the piecrust flat; brush all over with egg wash.
4. Season with salt and pepper. For varied flavor, add garlic or onion powder, or dried herbs such as thyme and oregano.
5. Cut into 2-inch squares; transfer to baking sheet.
6. Bake crackers 8 to 10 minutes or until golden brown. ///





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4 Summer Departures

NATIONAL PARKS



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June

NORWAY SWEDEN & DENMARK



Enjoy the incredible history and natural beauty of three countries. Cross the longest suspension bridge in the world. Experience dramatic Fjord scenery, including the majestic Geiranger fjord. Visit working Scandinavian farms and discuss operations in Sweden & Norway. Ride through breathtaking landscapes on fjord cruises and a scenic train ride.

August

GLACIER PARK & Calgary Stampede



In Montana, traverse Glacier National Park's 50-mile Going-to-the-Sun Road to see impressive glaciers, beautiful valleys, cascading waterfalls, towering mountains, and colorful wildflowers. Explore a glacier on an all-wheel-drive bus buggy equipped for the Canadian Ice Fields. See the famous Calgary Stampede Rodeo & enjoy their Chuckwagon Races!

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July

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July

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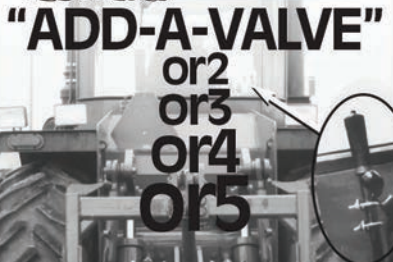
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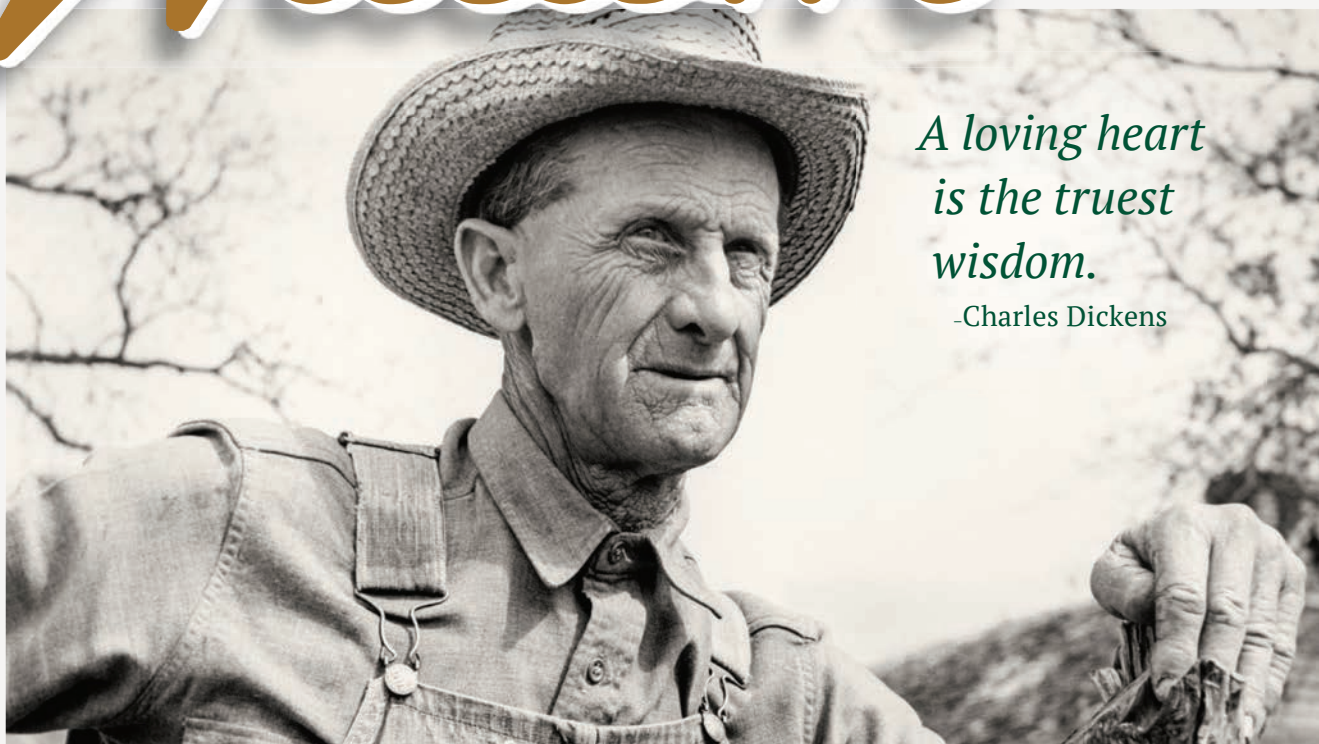
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Wise men talk because they have something to say; Fools, because they have to say something.

PLATO

Wisdom is knowing what to do next. Skill is knowing how to do it. Virtue is doing it.

THOMAS JEFFERSON

The man who asks a question is a fool for a minute, the man who does not ask is a fool for life.

CONFUCIUS

Knowledge speaks, but wisdom listens.

JIMI HENDRIX

The growth of wisdom may be gauged accurately by the decline of ill temper.

FRIEDRICH NIETZSCHE

Authority without wisdom is like a heavy axe without an edge, fitter to bruise than polish.

ANNE BRADSTREET

For wisdom is a defence, and money is a defence: but the excellency of knowledge is, that wisdom giveth life to them that have it.

ECCLESIASTES 7:12 (KJV)

Angry people are not always wise.

JANE AUSTEN

Wisely and slow; they stumble that run fast.

WILLIAM SHAKESPEARE

The art of being wise is the art of knowing what to overlook.

WILLIAM JAMES

No, that is the great fallacy: the wisdom of old men. They do not grow wise. They grow careful.

ERNEST HEMINGWAY

The wise person doesn't give the right answers, but poses the right questions.

CLAUDE LEVI-STRAUSS

The only true wisdom is in knowing you know nothing.

SOCRATES

Knowledge can be communicated, but not wisdom. One can find it, live it, be fortified by it, do wonders through it, but one cannot communicate and teach it.

HERMAN HESSE

Sometimes one likes foolish people for their folly, better than wise people for their wisdom.

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