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Bring on the beneficial bugs

USDA provides funding to help farmers install
pollinator habitats on working farms. **Page 6**



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The 5 traits that successful farmers share

BY BOB KEMERAIT

UGA Extension Plant Pathologist

YOU, AS FARMERS, share common traits. You must to survive in farming. These traits include dedication, strong work ethic, tenacity, a can-do attitude, adaptability and faith.

As row crop growers, you are faced with protecting your crops against losses from diseases and nematodes while protecting profitability by careful management of expenses. Often, as the growing season slips towards harvest, I remind you to watch closely and to learn from mistakes made so as to avoid them next year.

I don't want to do that here. Instead, I would rather focus on things that you as the "best" growers do right. Yes, these may be my opinions, however, among my colleagues there is close agreement in who you are as our best growers.

A successful grower is one who can continue farming season after season, year after year. Farmers are my heroes. However, for today, I further define a "successful" grower as one who is respected among his peers and recognized as a leader in the agricultural community. From my experience, growers identified as such further share at least five traits, in addition to those noted earlier. These include:

1. Successful farmers are students of the crop. Without exception, the best growers I know work to learn all they can about the nature of the plants that become the crops they grow. They do not simply follow a production recipe, but seek to understand how to optimize meeting the needs of the crop from seed until harvest, an understanding that requires equal parts science and art. These growers strive to understand what it takes to get a good stand, to grow the crop in vegetative stages and to nurture reproductive growth to maximize yield. As one corn grower told me, "I don't feel like I have a great understanding of a corn plant, but I do understand enough to know that it needs everything it needs as fast as it can get it. Corn doesn't have time to wait or dawdle like cotton and peanuts I grow; there is no second chance with corn."

2. Successful farmers are often closely engaged with other growers. It is my experience that the most successful farmers in the Southeast nurture friendships and



ADVICE: One of Bob Kemeraït's five traits of successful farmers is staying engaged with other growers. PHOTO BY JEVITIC/ISTOCK/GETTY IMAGES

TAILGATE TALK

collegiality with each other and in groups. Such engagement with other growers seems to serve two purposes. First, it helps the growers as they consider management for their crop on a week by week and season by season basis. Secondly, the banter among farmers, often brutal, seems to help them to better manage the many stresses that come with being a farmer.

3. Successful farmers are timely. Without exception, the most successful farmers in my world are timely with deployment of pest management tactics and with everything else needed to grow a crop. Careful planning ensures opportunities that will produce better yields and a healthier crop are not missed. Said a farmer from Lee County, Ga., "Timeliness is, without a doubt, the most important part of high yield management from start to finish."

4. Successful farmers are often innovators and early adopters, though as one farmer told

me, "Innovation get harder the more I age." While their equipment may be older and they never forget the basic principles of crop production, successful farmers stay engaged with advances in crop production and are willing to take calculated risks to improve their production and profitability. Innovation may be testing new varieties or fungicides. Innovation may be adopting new technology for better production. Said a grower from Berrien County, Ga., "Bob, we are cautious about every new thing that comes along; however, we are eager to adopt new practices and technologies that research-based and well-proven."

5. Successful farmers pay attention to what is happening in their fields. Whether through scouts, consultants, Extension agents or their own footprints in their fields, successful growers are aware of the growth and development of their crop, threat from pests and need for appropriate inputs.

My world encompasses peanuts, cotton, corn and soybeans. In the

I would rather focus on things that you as the "best" growers do right. Yes, these may be my opinions, however, among my colleagues there is close agreement in who you are as our best growers.

Southeast each of these crops faces attack from multiple pathogens and from more than one species of nematode. Peanuts are unique here in that growers plant them expecting to spray this crop with fungicides multiple times during the season. It is only over the past 20 years that growers have routinely considered spraying fungicides on corn, cotton and soybean. The most successful farmers I know not only tend to the growth and nutritional needs of the crop, but also protect it from diseases and nematodes. In doing so, they share at least five important traits in common.

Farmers are my heroes.

COMMENTARY

A push for a new farm bill came with a letter

All lanes of the American agricultural highway merged in September to drive a message to Washington. Farmers facing dire economic situations need a new farm bill and financial assistance. That unified voice was a good thing.

Sept. 9, more than 300 national, regional and state groups representing the breadth of U.S. agriculture sent a signed letter to congressional leaders, calling on them to pass a new farm bill before year's end. House Speaker Rep. Mike Johnson, House Majority Leader Hakeem Jeffries, Senate Majority Leader Charles Schumer and Senate Minority Leader Mitch McConnell received the letter. Many members of the groups, including major commodity groups from throughout the South and Southeast, followed the letter with a coordinated fly-in trip to Washington to bring farmers and ag lenders together with lawmakers and staff to discuss the issue face to face.

"It is critical that Congress pass a new farm bill that strengthens the safety net as many producers are facing multiple years of not being profitable, and this is causing their overall financial situation to deteriorate. Some will have challenges as they seek operating credit for the 2025 crop year," the letter states.

The letter goes on to say, "Farmers are struggling, and the decline in the farm economy is real. Estimated 2024 net farm income for U.S. agriculture is projected to be down \$55.61 billion, a more than 27% drop from the 2022 level."



BRAD HAIRE

The cost of inputs to grow crops remains elevated, and prices for major crop commodities are down, some well below what's needed to cover those costs. "Despite these factors, USDA projects that federal support for production agriculture in 2024 will be at its lowest since 1982," according to the letter.

The full-force fellowship of ag groups that coalesced in Washington know the situation is immediate for farmers. U.S. agriculture, including many from the Southeast, have champions in Washington who are listening and understand. But all in power in Washington must understand they need to make sure our country's farmers have the means and safety nets to produce food, fiber and agricultural products to sustainably continue as a prosperous, world-leading power.

Even if Congress passes and a president signs a new farm bill that addresses the real-world crisis farmers face today and tomorrow, farmers need assistance to weather the current financial storm into the next growing season.

Sept. 9, Joshua Baethge, Farm Progress policy editor, wrote an insightful piece, detailing what's on the lawmakers' agenda. According to sources close to the negotiations, he says, a second farm bill extension is almost a given. The question remains how long it will be. Find up-to-date information on the farm bill at southeastfarmpress.com.

ISSUES

A debt of gratitude to NC peanut farmers

With all the discouraging news today, any nugget of positivity is welcome indeed. One piece of good news is the remarkable yield gains North Carolina peanut farmers have seen since the North Carolina Peanut Growers Association was formed in 1953.

At the NCPGA annual meeting Sept. 6 held following the peanut field day at the Peanut Belt Research Station in Lewiston-Woodville, NCPGA President Dan Ward, a Clarkton, N.C. peanut farmer and 2021 Farm Press Peanut Efficiency Award winner, noted that in 1954, when the original bylaws of the association were amended, the average North Carolina peanut yield was 1,425 pounds on 176,000 acres. In 2024, the average yield is forecast at 4,216 pounds on 127,840 acres. That's a nearly threefold increase in average yield.

At the meeting, Ward pointed out that NCPGA bylaws were revised again in 1963, 1994, and 2005. Ward put the tremendous yield gains in perspective by highlighting the average peanut yield and acreage for each of the years NCPGA's bylaws were revised.

As Ward noted, average yield in 1954 was 1,425 pounds on 176,000 acres. That increased to 2,060 pounds on 176,000 acres in 1963; 3,215 pounds on 151,000 acres in 1994; 3,000 pounds on 97,000 acres in 2005; to this year's 4,216 pounds on 127,840.

Since the last bylaw revisions in 2005, North Carolina has seen an increase of 30,000 peanut acres and yields have increased 40%. "The bylaws that governed our actions needed to be reflective of North Carolina peanut production in 2024 and the growers we



JOHN HART

serve," Ward said.

The focus of the revisions was to create clearly defined districts based on planted peanut acres and a routine timeframe for district updates. Ward says the goal is to better serve every North Carolina peanut farmer.

The North Carolina Peanut Growers effectively unified state peanut farmers since the association was formed in 1953. The group has financially supported research that has brought improved varieties, more efficient cultural practices, and better rotation strategies to the farm.

Progressive varieties and advancements in technology, as well better fungicides and crop protection products all played a huge role in the strong peanut yield gains over the past 70 years. But the greatest factor of success is the North Carolina peanut farmer. Peanuts are tough and temperamental to grow. But North Carolina peanut farmers are up to the challenge. Each year, they have continually increased their yields under consistently challenging conditions.

2024 has been more challenging than most. An unprecedented June drought, a tropical storm in July, a cooler than normal September that has impacted pod maturity, and ever-rising production costs out of sync with profitability all weigh heavily. But the North Carolina peanut farmer carries on. All of us who enjoy the famous Virginia or ballpark peanut they diligently produce owe them a debt of gratitude.

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Profitably growing sorghum in South Carolina

BY JOHN HART

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FOR EIGHT YEARS, Rick Boyles has been diligently breeding sorghum and other cereal grains such as wheat and oats with the belief that these crops have a place in South Carolina.

Since 2017, Boyles, an assistant professor of plant breeding and genetics at Clemson University, has led the cereal grains breeding program at Clemson's Pee Dee Research and Education Center in Florence.

Boyles is a firm believer that sorghum, a crop not traditionally grown in South Carolina, has a place in the Palmetto State and across the Southeast region. He's committed to helping South Carolina farmers profitably grow sorghum on their farms.

The Clemson cereal grains breeding program has released several sorghum hybrids adapted to the Southeastern United States. Boyles and his team are screening 500 new hybrids annually that are particularly targeted to the climate of South Carolina and other southeastern states.

"There is not a lot of sorghum acreage in the southeastern U.S. so there is not a lot of private industry investment and engagement in this crop. But we think sorghum has a place in marginal dryland cropping systems in this region because of years like this where we have extended periods of dry weather at variable times of the year and we're farming on quite sandy soils," Boyles said at an Aug. 29 field day at the Pee Dee REC.

REAL-LIFE SCENARIO REPLICATION

Boyles says a goal of the Clemson breeding work is to develop and optimize the genetics of sorghum to fit into the production systems of farmers in the Southeast. He notes that most sorghum hybrids farmers plant were developed in the High Plains where most grain sorghum is planted.

"These hybrids have major issues with disease resistance or lack thereof and have other limitations that do not give farmers the necessary yield potential, despite the crop having a great amount of genetic diversity. We had to develop that by breeding and selecting for these environments, which we've been doing for the last eight years," he said.

Indeed, grain sorghum presents challenges in the Southeast, which is one



TOP: Speaking at the Pee Dee Research and Education Center Field Day, Clemson cereal grains breeder Boyles said a goal of the Clemson breeding work is to develop and optimize the genetics of sorghum to fit into the production systems of farmers in the Southeast. **BOTTOM:** A sorghum research plot at the Pee Dee Research and Education Center photographed on Aug. 29. PHOTOS BY JOHN HART

reason it isn't planted widely in South Carolina. Disease pressure, particularly anthracnose, is an ongoing challenge lowering the crop's yield potential.

In his breeding work at Clemson, Boyles and his team are screening lines to produce grain sorghum hybrids that are resistant to anthracnose, fusarium head mold and other diseases. The top aim of the breeding program is to develop varieties that can yield well in South Carolina and other states across the Southeast.

At the Pee Dee field day, Boyles and Maggie Thomas, a Ph.D. student at Clemson, highlighted a multi-crop study, funded by USDA, which examines water use efficiency and response to nematode pressure of sorghum, soybeans and corn.

Boyles says one research goal is to provide data on how each crop responds under different production environments and use this on-farm data to build realistic crop en-

terprise budgets.

Thomas, who grew up on a row crop farm in Marshville, N.C., about an hour's drive northwest of the Pee Dee Center, said another aim of the research is to replicate a real-life scenario for each crop.

On-farm trials were set up on four locations across South Carolina, North Carolina, and Georgia. Five varieties of sorghum, corn, and soybeans commonly grown throughout the Southeast were planted at each site.

"We planted eight row passes of each variety in 300-foot lengths and grouped them together by crop. We created mini field scenarios for each crop. We asked the farmers that were involved to manage these crops just as they would their own and they generously provided their time and energy and provided the economic inputs as well as their management practices to us," Thomas explained at the field day.

"Before planting we went to each site and

took comprehensive soil samples for nematode levels and overall soil health which we will be repeating at harvest. Each location in this trial has had its own unique challenges," she said.

RESEARCH UNDER VARYING CONDITIONS

Thomas said the unprecedented June drought this year brought issues and concerns with crop performance and weed management at each research site. She says they plan to incorporate the challenges they faced this year to provide farmers with data on dealing with these real-world farming challenges on their farms.

"Our research aim is to address several critical areas by analyzing yield data and economic inputs. We're working to identify what crop varieties offer the best returns under varying conditions. We are also trying to understand how each crop impacts soil fertility, carbon content and nematode levels," Thomas said.

A goal is to develop crop rotations that will improve long-term soil health and reduce pest and weed pressure. In addition, Thomas said research data this year, where water has been scarce, will help farmers determine which crop uses water most efficiently. This year is the first year of the study and the research will continue next year at each site to ensure the findings are comprehensive and applicable across different seasons and conditions.

"Ultimately, we're compiling all of this data into a user-friendly enterprise budget which you can reference when making planting decisions for your farm. For example, if you know you have soil in a field that is prone to nematodes, these tools can help you estimate potential production for each crop and determine whether planting that crop will help or hurt your nematode problem," Thomas said.





POLLINATORS WELCOME

BY JOHN HART

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FARMING AND LAND management practices are not always conducive for pollinators because farmers are trying to manage a single crop in a large area.

"Pollinators need diverse habitats. They need a lot of different forages available throughout the year. They also need host material. Think about butterflies and moths. They have caterpillars so they need plants that will host those caterpillars," explains Ben Powell, coordinator of Clemson University's Apiculture and Pollinator Program.

Parasitoids and moths, as well as bees and butterflies, are all valuable pollinators that can find a place on a farm. "If we're going into a farm field, and we're suppressing our pests all the time, we're inadvertently suppressing the predators and the parasitoids that could be helping us out," Powell says.

Speaking at the Pee Dee Research and Education Center Field Day Aug. 29 in Florence, Powell encourages farmers to find a place on their farm for pollinator habitat. That could be a field that isn't that productive for cash crops, a roadside, or a pond bank.

"The idea is can we provide some places on the farm that are not cultivated as harborage or habitat for these things and then hopefully get a little spillover. If we could provide habitat where we're building up populations of these parasitic wasps, these predatory wasps and flies, those increasing populations are going to drift over into our crop and then knockdown things like caterpillars, stinkbugs and other serious pests in the crop," Powell said at the field day.

Powell encourages farmers to plant a wide variety of native plants to provide pollinator habitat, to provide food for



POLLINATION EDUCATION: Speaking at the Pee Dee Research and Education Center Field Day in Florence Aug. 29, Ben Powell, coordinator of Clemson University's Apiculture and Pollinator Program, encourages farmers to plant a wide variety of native crops to provide pollinator habitat. PHOTO BY JOHN HART

honeybees and conservation habitats for pollinators. Examples include purple coneflowers, spotted beebalm and Blackeyed Susans.

"The other thing, too, is that by having a steady source of flowers providing nectar and pollen, you're building your pollinators as well as your predators and parasitoids. Some of our crops like soybean and cotton benefit from having pollinators in the area as well," Powell said.

FUNDING FOR POLLINATOR HABITATS

Powell said USDA's Natural Resource Conservation Service provides funding to help farmers install pollinator habitats on working farms. He encourages farmers to take advantage of the program.

"The problem is they (NRCS) provide guidance on what and how to plant but don't really tell you what to do once it's in. There's not a lot of guidance on maintenance. These are not crop systems that we're used to. We're not making a lot of money directly off these plants," Powell said.

At the Pee Dee Research and Education Center, Powell and his team are managing 26 pollinator plots in a one-acre field. Powell says the plots were put into place to test different pollinator management strategies, such as mowing, disking, trampling, burning, and targeted herbicides.

"We mow once a year at the end of the winter then we have another plot where we mow mid growing season to knock



WORK IN THE FIELD: A honey bee pollinates echinacea, commonly known as coneflower.

PHOTO BY STEPHANIE SOKOL

down the canopy and see if we can release some things underneath. We are trampling so we take the tractor with a cultipacker and just smash things down. We are also burning," he said.

The idea is to maintain the system to improve diversity in an effective and economical way.

"The take home there is the maintenance on these things is actually pretty easy. It's really once a year in the wintertime when you're not really spending a whole lot of time on your crop systems or your farm fields; you can come in and do your maintenance, whether it's burning, mowing, trampling, so forth, and you get some pretty good returns," he said.

BEE GRAPHIC AT TOP: VECTOIR/ISTOCK/GETTY IMAGES PLUS

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is at the Expo. Don't forget to check out colleges from across the Southeast as well to further your education. Plan to attend now and get your tickets today at www.sunbeltexpo.com.
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Deficit irrigation an option for North Carolina farmers

BY JOHN HART

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EMPLOYING DEFICIT IRRIGATION is one way for farmers to protect crops against dry conditions and achieve respectable yields, while not breaking the bank.

Deficit irrigation is a supplemental irrigation strategy that focuses on applying less water than a crop's full water requirements.

North Carolina State University Extension Water Resiliency Specialist Chad Poole is a believer in deficit irrigation when water supplies are inadequate, because it allows farmers to manage limited water and only irrigate when the crop is most sensitive to water deficit conditions. This can make a big difference in determining final yields.

WATER HOLDING PONDS

One water source for deficit irrigation is water holding ponds that can channelize surface water into the pond to capture the water for irrigation during the dry periods of the growing season. Pond size and construction costs vary, thus limiting water quantities.

Poole, colleagues Mohamed Youssef and Hossam Moursi, and graduate students at N.C. State have been conducting research on crop yield and water quality benefits of holding ponds for over six years now.

Based on this research, NCSU researchers believe this system has a place in North Carolina. One of the research sites is at the Peanut Belt Research Station in Lewiston-Woodville where a seven-acre pond provides an irrigation capacity of 725-acre inches of water.

Poole said this is not a lot of water, considering the farm has irrigation capacity for approximately 250 acres of cropland. For each irrigated acre, it can supply less than three-acre inches of water without refilling, but he said the water can be targeted when corn or other thirsty crops need it most to maximize yields.

He adds that the water quality in the holding pond is excellent.

During the CHROME Ag Expo Aug. 21 at the Peanut Belt Station, Poole highlighted this research work on water holding ponds and emphasized the benefits of using deficit irrigation to improve corn yields. For corn, Poole said water is most



MAKING THE MOST OF WATER SUPPLY: Speaking at the CHROME Ag Expo at the Peanut Belt Research Station in Lewiston-Woodville, North Carolina State University Extension Water Resiliency Specialist Chad Poole said deficit irrigation can improve corn yields when water is applied from tasseling to milking. PHOTO BY JOHN HART

needed from tasseling through milking to maximize yields.

"Knowing when that ear is going to fill out and when it is pollinating makes all the difference in the world," Poole said.

INCREASING NUTRIENTS AND YIELDS

Poole said research from 2022-2023 shows that applying water when it was needed during these stages of growth boosted corn yields.

In 2022, the research team saw a 116% increase in corn yield using deficit irrigation. The next year, they saw a 59% increase in yields. "The top end yields both years are pretty much identical," Poole said.

Importantly, Poole said irrigation allows the corn plant to take up more nitrogen and phosphorus than non-irrigated corn. "Not only can we increase revenue at the end of the season, but we can also make sure that fertilizer you're putting out gets used to make that grain. Irrigation is allowing us to do that."

An added benefit of irrigation and the water holding ponds is that it helps minimize nutrient runoff downstream, a huge benefit to water quality. Poole said the pond at the Peanut Research Station averaged a 16% capture rate of runoff the previous two years even with pump repairs during the growing season.

"That's over 200-acre inches of additional water conservation on average without having to put in a well. That's not a lot of water on a 300-acre farm, but at the right time it can make us a lot of money. More importantly, the fertilizer that we're losing through the runoff is captured and treated by the pond. Nitrogen loss is reduced by over 40% and phosphorus loss is reduced by over

60%," Poole said.

Soil loss to offsite receiving surface waters is reduced by over 90% by having the pond at the station.

Poole encourages farmers to participate in the Agricultural Water Resources Assistance Program, or AgWRAP, which is administered by the North Carolina Soil and Water Conservation Commission through local soil and water conservation districts. Poole said it is a cost share program that will pay up to 75% of the cost of a water capture pond.

Poole pointed out that work at the Lewiston-Woodville station has been supported by a USDA Conservation Innovation Grant (CIG) and Cotton Incorporated.

Chad Poole encourages farmers to participate in the Agricultural Water Resources Assistance Program, or AgWRAP, which is administered by the North Carolina Soil and Water Conservation Commission through local soil and water conservation districts.

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Herbicide-coated fertilizer promising in North Carolina

BY JOHN HART

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NORTH CAROLINA COTTON farmers who have discarded layby rigs and hooded sprayers might find luck with residual herbicides coated on granular fertilizers for late season control of tough weeds like Palmer amaranth.

The idea is to reduce trips across the field by applying a residual herbicide and fertilizer simultaneously. North Carolina State University Extension Weed Specialist Charlie Cahoon likes the system and says it may fit where farmers have abandoned residual herbicides in a traditional layby- or hooded-sprayer application.

However, he emphasizes that herbicide-coated fertilizers only work as a part

of a comprehensive herbicide program that starts with a good PRE and timely post-emergence applications also including a residual.

Cahoon and his colleagues have been conducting research on herbicide-coated fertilizer for several years now. He said it can be a cost-effective way for farmers to apply residual herbicides and granular fertilizers at the same time.

At the CHROME AG Expo on Aug 21 at the Peanut Belt Research Station in Lewiston-Woodville, Cahoon highlighted research using herbicide coated fertilizer as a part of cotton weed management program.

For the demo, cotton was planted in July and then kept clean with glyphosate plus Liberty until ready for herbicide-



COST-EFFECTIVE TREATMENT: At the CHROME Ag Expo in Lewiston-Woodville Aug. 21, North Carolina State University Extension Weed Specialist Charlie Cahoon discusses research looking at residual herbicides coated on granular fertilizers. PHOTO BY JOHN HART

coated fertilizer treatments. Cahoon and his team then applied the residual herbicides coated on granular fertilizer. They applied 285 pounds per acre of ammonium sulfate which provided 60 pounds of nitrogen to meet the fertility needs of cotton.

“Where we have abandoned traditional layby herbicide applications, this technique may have value for late season residual weed control while meeting our crop’s fertility needs. When we’ve controlled maybe one or two or three flushes of pigweed already, and we’ve got a cotton canopy established, I think they work really well in helping us with some late season weed control,” Cahoon said at the field day.

APPLICATION TIMING AND RATES

Cahoon went on to emphasize if applied too early in the season, farmers may not see the same results. “When we have put these herbicide-coated fertilizers out earlier in the season and they have to deal with multiple, and often larger, flushes of pigweed, this technique does not look as good as residual herbicide applied in a traditional liquid, broadcast applications.”

“In the majority of our work, as comparison treatments, we will apply these fertilizers with residual herbicides on them and we will compare them to the same herbicides applied over the top and in a post-directed or hooded application,” he said.

“Most of this has been primarily targeted at pigweed because it drives a lot of our decisions. When used as a part of a system including multiple postemergence applications prior to application of our herbicide coated fertilizers, we have seen similar control with this technique as our traditional liquid applications whether that’s over-the-top, post-directed, or through a hood,” he added.

Cahoon and his team evaluated various fertilizer rates typically used for nitrogen fertility in cotton production. They studied ammonium sulfate rates ranging from 143 pounds per acre up to 429 pounds per acre. “The breakpoint seems to be if we get above 200 pounds of fertilizer, we’re getting the same level of weed control as our traditional liquid applications over the top or post-directed.”

Cahoon said they examined both Zidua and Anthem Flex and a number of different products that you would never think about using in cotton. He said moving forward this application technique may open the toolbox for additional residuals herbicide for cotton that we cannot currently apply over-the-top in a liquid, broadcast application.

“We’re using treatments like Valor, Zidua, and Anthem Flex coated on fertilizer, that we could never apply over-the-top of cotton in a liquid application because of injury concerns. They all performed similar and offered 90%-plus late-season control of pigweed,” Cahoon said.

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RAIN BIRD

High yields still possible for North Carolina cotton

BY JOHN HART

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MUCH-WELCOMED RAIN IN July and August enabled the North Carolina cotton crop to recover from an excessively hot and dry June with North Carolina State University Extension Cotton Specialist Guy Collins saying high yields are within reason for the Tar Heel State this year.

Speaking at the CHROME Ag Expo Aug. 21 at the Peanut Belt Research Station in Lewiston-Woodville, Collins said he — like farmers across the state — was worried at the end of June about the prospects for the North Carolina cotton crop because of the historic June drought. The good news came with the arrival of much-needed rain in July as the cotton started blooming.

"We were in a position where if it started raining, we had to keep on getting rain, time after time throughout July and August. During that period, I was saying the likeli-

hood of having any three-bale cotton this year was pretty low because the likelihood of having another drought week or just a hot, dry period at any time in July or August was pretty high," Collins said at the field day.

"Thankfully, we have gotten the rain that we needed throughout July and August, and our crop has made one of the best recoveries I've ever seen. We've got a very good crop and a lot to be proud of. It is trending a little earlier than normal, not significantly but noticeably."

Following heavy rain from Tropical Storm Debby in early August, Collins said he received many reports about cotton square abortion. Collins said it is actually young boll abortion or fruit shed.

"A lot of times these fruit will bloom, become a boll, and within a few days they will shed off. That could be a product of a number of things. It could be water logging if you have standing water from the hurricane. I still argue that a hurricane in August is an



LET IT GO: Speaking at the CHROME Ag Expo Aug. 21 at the Peanut Belt Research Station in Lewiston-Woodville, North Carolina State University Extension Cotton Specialist Guy Collins advised not to take corrective action for nutrient deficiency in cotton this time of year.

PHOTO BY JOHN HART

asset to us. I don't want one in September or October, but in August in most cases, it can help us finish up the crop really strong and that seems to be what's going on now," Collins said.

Since Debby, some of the leaves on cotton plants have begun turning yellow, a sign of

nutrient deficiency. However, Collins advises that corrective action is not needed now.

"In nearly every case I've seen, it's way too far in the bloom period to turn it around. It would have to be week three or earlier in the bloom period to really take action to where we would see it reflected in higher yields. In most cases that's not applicable to growers this year," Collins said.

In fact, Collins said yellowing leaves on cotton plants in August is not necessarily a bad thing.

"Like tobacco, we want cotton to ripen. We want those leaves to age. When we get into late August, more so into September, we want to see that off color. We don't want to see it nice and lush green like the rest of the year. We want it to ripen, otherwise it can be very difficult to defoliate, and you could have a lot of regrowth. Any corrective action nutrient wise could likely make it greener, or green it up as we say, but it's not likely to be reflected in higher yields," he said.

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Broiler litter improves soil health, fertility

BY JOHN HART

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CLEMSON UNIVERSITY NUTRIENT management specialist Bhupinder Farmaha is committed to helping farmers improve the fertility of their soil so they can increase yields and maximize profit.

Farmaha's overriding goal is to improve soil health on South Carolina farms – something not accomplished by synthetic fertilizer. He wants to find methods to increase both crop yields and enrich soil and has looked to cover crops and broiler litter to help.

Farmaha, an associate professor at Clemson working out of the Edisto Research and Extension Center in Blackville, notes that soils in the southeastern United States often have low water and nutrient holding capacity due to low organic matter and sandy texture.

"Broiler litter, rich in organic matter

and nutrients, can improve soil health and crop productivity by enhancing soil structure and water retention. However, its variable composition and complex soil interactions necessitates site-specific studies to determine optimal application rates for sustainable corn production and soil health improvement in the Southeast USA," Farmaha says.

With this goal in mind, Farmaha and his team are conducting research to determine site-specific optimal rates of broiler litter and urea for corn production in the southeastern United States across diverse farming conditions and site characteristics.

DRYLAND VS. IRRIGATED LAND RECOMMENDATIONS

Since 2022, Farmaha's team has been conducting an intensive, integrated research and Extension project on broiler litter application across South Carolina. The research, led by Clemson Ph. D. student

Karamvir Kaur, involves collaborations with 20 farmers.

During a field day at the Pee Dee Research and Extension Center in Florence Aug. 29, Farmaha explained that they have different recommendations for dryland and irrigated land. He said the recommendations are based on yield goals.

"If your yield goal is 200 bushels, a common summary is that you apply 1.2 pounds of nitrogen to grow every bushel of corn. But that isn't required in every field because some fields are managed much better and have better site availability than others. It means we do need to account for site availability when we make a recommendation," Farmaha said.

"For dryland corn, a nitrogen rate from 120 to 150 pounds per acre should be sufficient. When corn is irrigated, apply 180 to 225 pounds per acre. Reduce the rate by 20 to 30 pounds per acre when corn follows soybeans in a rotation. When a

legume cover crop is grown and turned over before planting corn, reduce the rate of N applied by 50 to 80 pounds per acre," he said.

The amount of broiler litter to apply per acre depends on the nitrogen needs of the plants, and the nutrient content of the manure. A common recommendation is to apply 3 tons per acre at planting.

"Where we apply 3 tons the chicken litter the plants are darker green and taller with high biomass compared to the plants where we didn't have any chicken litter," Farmaha said.

In their research on the 11 sites in 2023, Dr. Farmaha explained that Karamvir evaluated corn yield response from applying a range of zero to six tons of chicken litter per acre. They also examined urea applications of zero to 300 pounds of nitrogen per acre.

"The reason we applied six tons is we did a survey with the Extension folks in



RESEARCH RESULTS: At one of the 20 on-farm research sites in South Carolina, Clemson University Ph. D. student Karamvir Kaur and Clemson soil fertility specialist Bhupinder Farmaha discuss their research on determining site-specific optimal rates of broiler litter and urea for corn production. PHOTO COURTESY OF CLEMSON UNIVERSITY



LEFT: Clemson Ph. D. student Karamvir Kaur applies poultry litter to a research plot on a South Carolina corn field. CLEMSON UNIVERSITY PHOTO

RIGHT: Speaking at the Pee Dee Research and Education Center Field Day, Clemson University nutrient management specialist Bhupinder Farmaha said broiler litter, rich in organic matter and nutrients, can improve soil health and crop productivity by enhancing soil structure and water retention. JOHN HART PHOTO



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North Carolina. They said they have several farmers who do apply up to 6 tons of chicken litter, and the question is should they continue doing that or not because there is a buildup of heavy metals, especially copper and zinc,” Farmaha said.

“For the farmer who applied chicken litter for 15 years, you can see they have high inorganic nitrogen compared to the others. Why so? Certain fields have more inherent soil nitrogen supply than the others because they can hold water better. They have high organic matter, or they have better aggregation in the soil particles,” Farmaha explained.

Farmaha said 8 of the 11 sites responded to both broiler litter and urea with yield increases across various environments.

He said economic optimum rates varied considerably among sites due to field-to-field differences.

“The variability in responses highlights the importance of site-specific management while determining optimal application rates for both broiler litter and urea,” Farmaha said.

Kaur says the study’s demanding nature is evident in its methodology. To ensure experimental consistency, Kaur and her team transport broiler litter from a single source at Edisto REC in Blackville to all test sites across the state.

“The application process is labor-intensive and precise: using calibrated plastic buckets, they manually distribute the litter across test plots. This method, while physically challenging in South Carolina’s hot and humid climate, is cru-

cial for maintaining accurate application rates and experimental integrity,” Kaur says.

The work often requires long days in difficult field conditions, with the team meticulously applying treatments, collecting soil and plant samples, and recording data. “Despite the physical toll,

this hands-on approach allows for real-time observations and adjustments, enhancing the quality of the research,” Kaur says.

Study sites were carefully selected to represent diverse crop and soil management practices, including varying levels of broiler litter use, cover cropping, and

conservation tillage.

“This diversity enables a comprehensive analysis of how different agricultural practices and soil types interact with broiler litter applications, providing insights applicable to a wide range of farming scenarios in the Southeast,” Kaur explains.

Amounts and results of poultry litter application

Recommendations from Clemson University nutrient management specialist Bhupinder Farmaha’s research, completed across 11 sites



Daily and Newman/Stock/Getty

120-150

pounds per acre nitrogen rate recommendation for dryland corn

8/11

sites responded to both broiler litter and urea with yield increases across various environments.

3

tons of chicken litter used resulted in darker green, taller plants with high biomass.

50-80

pounds per acre of Nitrogen to reduce by when a legume cover crop is grown and turned over before planting corn

20-30

pounds per acre to reduce rate by when corn follows soybeans in a rotation.

180-225

pounds per acre to apply when corn is irrigated

**SOUTHEAST
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Cover crops: Boost biomass, soil organic carbon

BY WHITNEY HAIGWOOD

Farm Progress

WHEN IT COMES to cover crops, biomass production is key to getting the most bang for your buck, and early planting dates pack the biggest punch. However, harvest operations often push cover crop planting dates later into the season.

So, what can a farmer do to maximize the return on investment (ROI) and get the most out of cover crops? To investigate, Kip Balkcom, research agronomist at USDA-ARS conducted a six-year study to determine the best planting dates and input rates for a high-residue cover crop.

Bottom line: management is key. “Cover crops require both a monetary and time investment, just like any other crop,” Balkcom said. “If we expect to get something out of them, we have to put something into them.”

Balkcom’s study took place at the Wiregrass Research and Extension Center

in southeast Alabama from 2015 to 2020. Cereal rye was planted on a Fuquay sand with a range of inputs. Balkcom’s research looked at:

- Four planting dates from October through early December
- Cover crop seeding rates at 60 and 90 pounds per acre
- Nitrogen fertilizer rates at 0, 30, 60, and 90 pounds per acre

The goal was to determine whether an increase in inputs on later planted crops could produce the same amount of biomass as earlier planted crops. Balkcom shared the biggest takeaways to maximize your ROI with cover crops.

SEEDING RATES: HOW LOW CAN YOU GO?

Balkcom explained the seeding rates in the cover crop study. When the study kicked off in 2015, it was believed that higher seeding rates provided better surface coverage. However, that is no longer the case.

“There is a lot of research out there showing we do not need nearly as much cover crop seed as we once thought,” he said.

Balkcom tested high and low seeding rates. He planted 90 pounds per acre for the high rate, then cut it to 60 pounds per acre for the low rate.

In the end, Balkcom said the seeding rate did not impact biomass production, and he believes he could have planted an even lower rate. “Using 60 pounds per acre as our low rate made no difference. I wish I would have cut it to 45 pounds per acre,” he said.

Of course, the amount of seed you plant affects the cost of production and reducing your seeding rate can boost your bottom line.

Balkcom said, “We do not have any control over how much seed costs, but we do have control over how much we plant. It is good if we can reduce these seeding rates, but we still have to know

how low we can go.”

PLANTING DATES AND NITROGEN RATES

Of the four planting dates in the cover crop study, two were planted early and two were planted late.

Early cover crop planting dates were late October and early November.

Late cover crop planting dates were late November and early December.

Nitrogen was applied at four rates from 0 to 90 pounds. Biomass was measured to determine the crop response to the fertilizer applications.

When nitrogen was applied at 90 pounds per acre, both the early and late planted cover crops saw an increase in biomass compared to when no nitrogen was applied at all.

The early and late planting produced 2.2 times greater biomass and 2.9 times greater biomass, respectively, when the highest nitrogen rate was applied.

While the later planted crop showed a

ENRICHING THE EARTH: Enhanced soil health benefits start with management for a high-residue cover crop. Cover crop biomass and soil organic carbon were higher when planted early and fertilized with nitrogen, according to a six-year study. PHOTO BY WHITNEY HAIGWOOD



slightly higher response to nitrogen, the earlier planted cover crops still produced twice the amount of biomass.

Balkcom said the big takeaway is early planting. "Across these coarse-textured soils in the southeast, we generally have to plant cover crops by Nov. 15 to produce enough beneficial biomass."

He also compared the late October planting date where no nitrogen was applied to the early December planting date where 90 pounds of nitrogen was applied.

These two scenarios averaged almost equivalent biomass production of cereal rye per acre.

The cost of production of the early December crop was considerably higher than the late October crop in this comparison.

Balkcom said, "For me this is telling. We were not able to overcome the environmental constraints of shorter growing days in the later planted cover crops, even though we threw money at the problem."

A LOOK AT COST AND CARBON

To further examine cost, Balkcom divided the cost of production by the amount of biomass produced to express results in dollars per 100 pounds of biomass.

For the two early planting dates, the cost of production was consistent at \$2 per 100 pounds of biomass. Balkcom said when additional nitrogen was applied on those early planted cover crops, biomass increased enough to offset the cost of the fertilizer.

This could justify nitrogen applications on early planted cover crops to enhance soil health benefits like erosion control, improved soil moisture, weed suppression, and soil organic carbon.

"In the past, we put on 30 pounds of nitrogen per acre to keep costs down, but if you plant early and put on 60 pounds or so, I think you could get that cost back in terms of biomass produced," Balkcom said.

He also looked at the connection between biomass and soil organic carbon. Balkcom said soil cores were taken across the soil profile to measure organic carbon concentrations. Results indicated that nitrogen fertilizer was necessary to build up soil organic carbon on the Fuquay sand in this study.

"Sands do not typically build up a lot of soil carbon. When we put on 90 pounds of nitrogen, it produced the most biomass, and that biomass added carbon back in the soil," he said.

Balkcom explained that biomass is generally 40% to 45% carbon. "You mul-

tiply that by the amount of biomass you produced, and that is how much carbon you added back. In terms of building up soil carbon, we added twice as much when we fertilized, compared to not fertilizing."

He also cited the importance of reduced tillage in cover crop management.

"Soil carbon is generally built up at 0 to 5 centimeters, or the top two inches of

the soil. As we get down to 10 to 15 centimeters, about six inches deep, we have basically dissipated that carbon. It does not build up as much in that region.

"I mention that, so people recognize when you utilize a cover crop, even in conjunction with tillage operations, you want to minimize surface disruption to help preserve the soil carbon you are trying to build up," he said.

Of course, Balkcom realizes this study was done on one soil type, at one location in the southeast. Cover crop management may change depending on soil type, climate, and cropping systems, but the benefits are clear.

"I think the benefits of cover crops are pretty consistent, and they will generally be enhanced as we increase the amount of biomass we produce," he said.



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Record U.S. soybean crop bearish for prices

BY JOHN HART

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THE UNITED STATES is expected to produce its largest soybean crop in history this year. And managed money funds and professional traders that speculate on the soybean market are delivering a clear message: prices should go down before rising.

Robert Harper, grain division manager for the Virginia Farm Bureau Federation, says soybean farmers must take this into consideration as harvest approaches and they make selling decisions for the 2024 crop. The soybean price outlook is more bearish than bullish.

“Two months ago, for the first time in history, the managed money funds, the professional traders that bet on price direction had the largest short position on the Chicago Board of Trade in history so they were telling you all loud and clear as clear as they can say it that they think the price of beans is going to go lower before it goes higher,” Harper said at the 2024 Soybean Field Day, Sept. 12, at the Eastern Virginia Agricultural Research and Extension Center in Warsaw.

Harper noted that last year at this time, on various futures contracts, soybean prices were roughly \$3 per bushel higher than they are today – devastating for soybean producers with stagnant input costs.

Just after Harper’s field day presentation, USDA released its September crop report and World Agricultural Supply and Demand Estimate (WASDE) report.

USDA forecasts U.S. soybean production at a record high 4.59 billion bushels in 2024. Based on conditions as of Sept. 1, USDA forecasts yield to average a record 53.2 bushels per acre. USDA forecasts area-harvested for soybeans at 86.3 million acres.

“Obviously the speculators knew that you planted a lot of soybean acres back in the spring. They get the crop progress reports every week. They see how healthy the soybean crop is across the big production states. Prices have been trending down, and those professional trading funds that bet on price direction have been selling soybean futures for about a year,” Harper said.

“Most people think that the bottom is not in yet for soybeans. You as a grower know what your input costs were. You’re estimating your yield right now. You know



SOYBEAN SUGGESTION: Speaking during the 2024 Soybean Field Day at the Eastern Virginia Agricultural Research and Extension Center on Sept. 12, Robert Harper, grain division manager for the Virginia Farm Bureau Federation, encouraged farmers to lock in soybean prices today above their break-even point.

about where your breakeven is going to be. Look at local basis; look at the futures market. If you can lock beans in today above your break even, you can make sales today,” Harper advised.

GLOBAL IMPACT

Harper said it is important to remember that the soybean market is complicated because soybeans are globally traded which impacts prices Virginia soybean farmers receive for their crop.

For example, last year, a leaf hopper outbreak devastated the corn crop with a disease that stunted much of Argentina’s corn crop. Because of the leaf hopper outbreak in corn, Argentina is expected to plant more soybeans than corn this year.

Brazil is expected to plant 110 million acres (converted from hectares) this year. The country recently surpassed the U.S. for the spot of number one bean producer.

In addition, reports indicate that China has a huge soybean stockpile in anticipation of the 2024 U.S. presidential election results – a huge amount of that purchased over the past two months from the U.S. and Brazil.

“They broke a record in August from buying beans from Brazil and from the United States. If you dig into this, they are preparing for who the next president of the United States will be. We remember the last time that the Trump administration was in office. The massive tariffs on what was imported to the U.S. from China was

devastating in the short term for soybean futures contracts,” Harper explained.

The record U.S. soybean crop this year remains a key factor in the bearish price outlook. Harper noted that high production costs for corn last year drove much of the increased soybean acres this year. This year is only the fourth time in history that U.S. farmers planted more soybeans than corn.

Harper encourages soybean farmers to keep a watchful eye on Brazil.

“The main bullish influence that you have on upward price movement right now is if they can’t get the crop planted in northern Brazil and central Brazil, and they get it planted and the weather doesn’t go right,” Harper said.



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Evolution of U.S.-Mexican cattle and beef trade

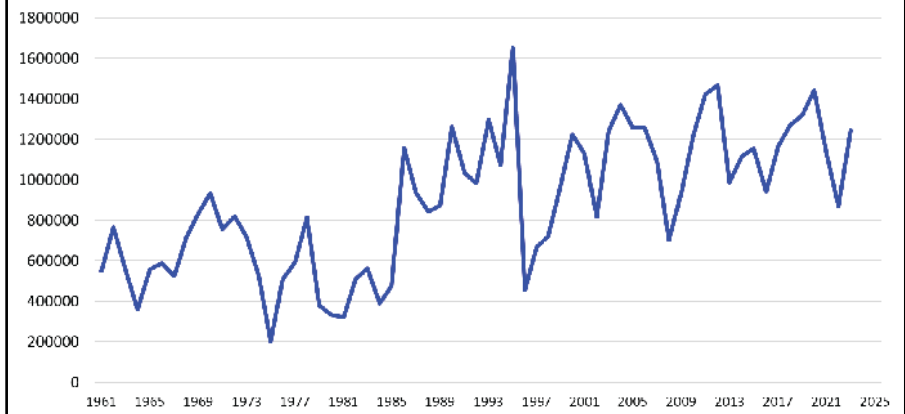
BY DERRRELL PEEL

The U.S. and Mexican cattle industries have a long and somewhat colorful trade history that continues to evolve today. Cattle frequently served as the currency of trade between Mexico and the U.S. from the U.S. Civil War through the Mexican Revolution and World War I. U.S. imports of Mexican cattle were important all through the 20th century and continues today (Figure 1). In the last 25 years, an average of 1.15 million head of cattle have been imported from Mexico each year. These imports represent an average of 3.3 percent of the U.S. calf crop. Mexico has a comparative advantage in the production and export of feeder cattle with vast regions of forage production in arid and semi-arid re-

gions as well as in the non-arable regions of dry and wet tropics in which cattle production is the main economic activity.

The next phase of beef industry trade between the U.S. and Mexico was the growth of beef exports to Mexico which began in the 1990s and accelerated sharply in the late part of the decade. By the late 1980s, Mexico was the third largest beef export market because there simply weren't many export markets (Japan accounted for 70 percent of total exports.) Mexico was roughly six percent of total U.S. beef exports at that time. Growing rapidly after 1996, Mexico rose quickly to become the number two export destination and accounted for an average of 23.3 percent of exports from 2000-2003 (Figure 2).

Figure 1. U.S. Cattle Imports from Mexico
Head, Annual



BEEF MARKETS

After the BSE case in late 2003, Mexico was the only beef export market that did not close or greatly reduce. Mexico accounted for 72.4 percent of total beef exports in 2004 and averaged 59.4 percent of exports from 2004-2007. Mexico was the number one beef export market from 2004-2010 before other markets recovered. Mexico was the number two or three export market each year from 2011-2020 and aver-

aged 15.0 percent of beef exports over the period. Recently Mexico dropped to the number 4 market with an average share of 9.2 percent of total exports from 2021-2023.

The economics that drove the increase in beef exports to Mexico in the 1990s and 2000s was largely a matter of supplementing deficit beef supplies in the country as consumption outpaced domestic beef production in the country. In other words, it was mostly a matter increasing the quantity of

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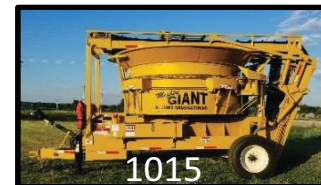


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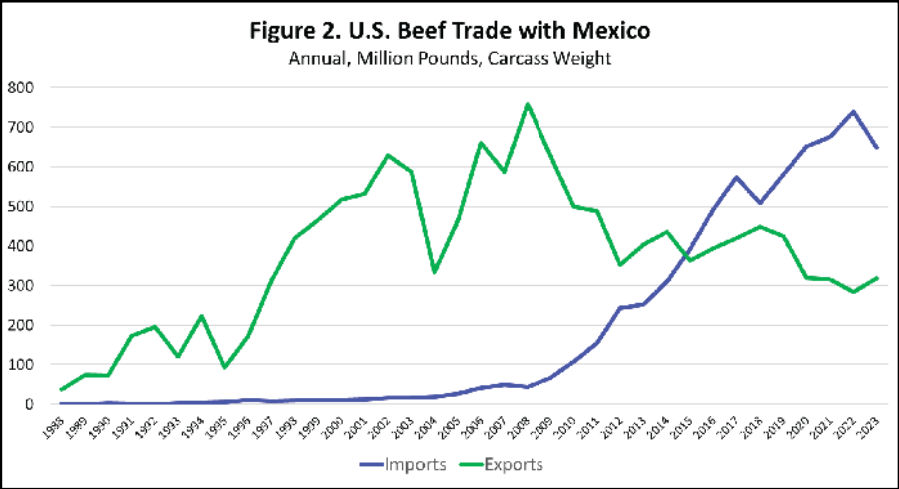


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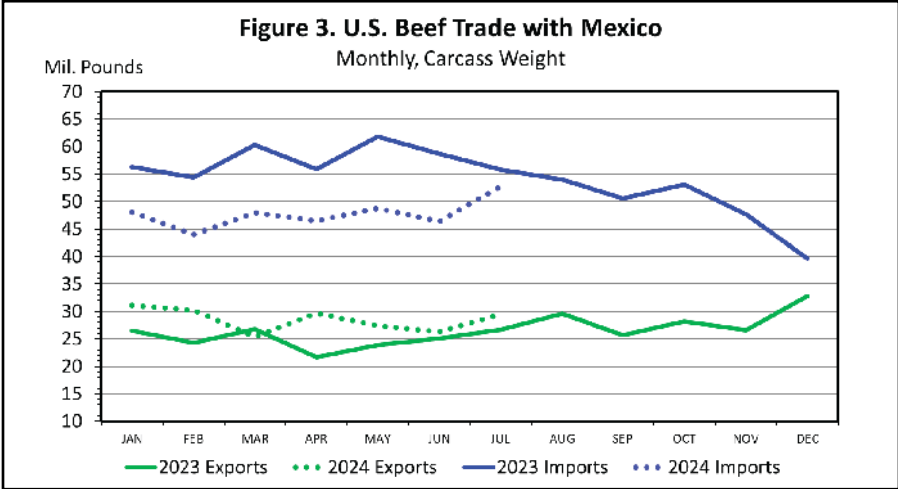
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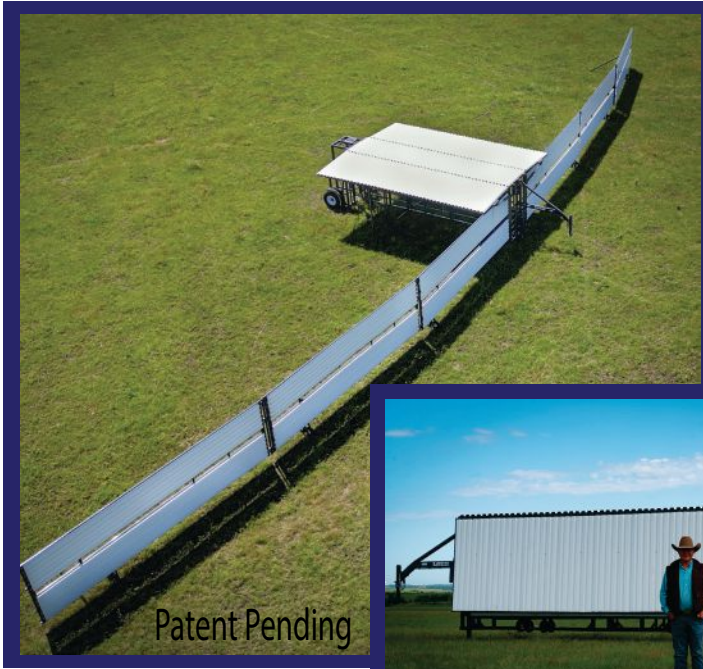
beef in Mexico. The final phase that has been added to increasingly integrated U.S. and Mexican beef markets is Mexico's emergence as a major global beef exporter. U.S. imports of beef from Mexico accelerated rapidly after 2009, with the country jumping to the number four place as a beef import source in 2010 (Figure 2). Mexican beef imports continued to grow with the country moving into the number three spot as a beef import source by 2017 and number two in 2021.

BOXED BEEF
The growth of beef exports from Mexico is largely the result of the Mexican beef industry switching from carcass-based beef markets to boxed beef technology in the 2000s. Adoption of boxed beef was a huge change in beef markets in Mexico that opened up much more value as specific products could be targeted to specific markets, including export markets. Mexico has also seen significant growth in cattle



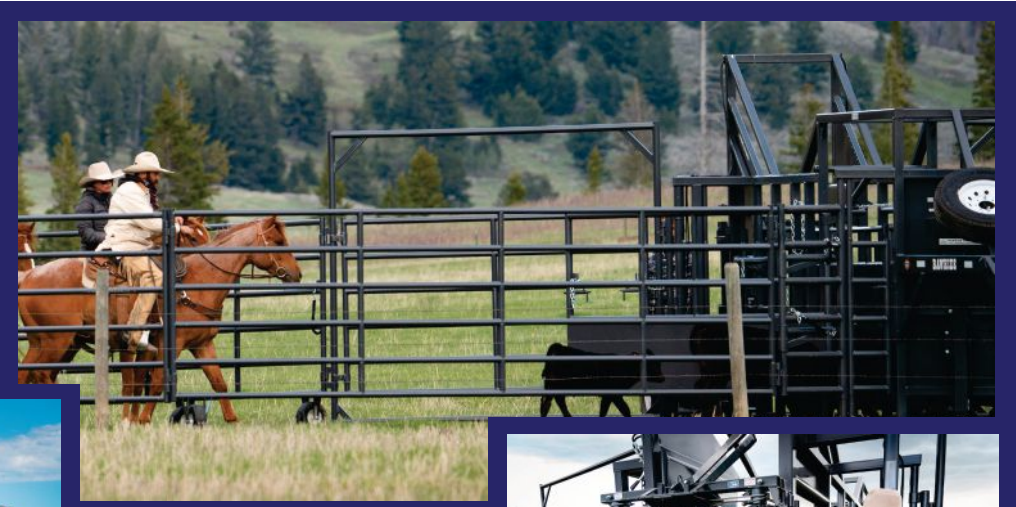
feeding and packing infrastructure in the past two decades. Mexico is now a major beef export market and beef import source for the U.S. meaning that trade has evolved from one-way flow of beef to bilateral trade of diverse products, which adds value in both markets.
Figure 3 shows beef trade with Mexico in recent months. Mexico has been an anomaly among U.S. beef trade markets in 2024 with exports increasing, despite de-

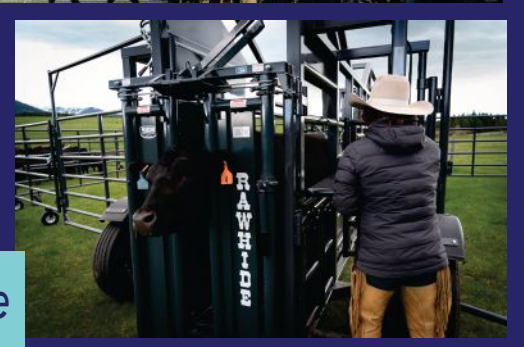
creasing exports to most other markets, and decreasing imports from Mexico, despite increasing imports from other major import sources. Numerous factors are no doubt contributing to current beef trade with Mexico, including Mexican macro-economic conditions and domestic beef market conditions, along with a Mexican Peso that strengthened against the dollar from 2022 through 2023 before weakening recently.



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Grazing cattle with no fence and a fake dog

BY TOM J. BECHMAN

THINK YOU'VE SEEN everything? Unless you have seen a robot dog interact with real cows in a field with no interior fences, you haven't! Soon, you should be able to see this technology at the Farm of the Future, which is moving from planning to implementation stages at the University of Illinois.

A key part of the Farm of the Future, located near U of I's Beef Farm and Energy Farm south of Champaign, Ill., will be grazing trials with cover crops. "We want to establish cover crops in the fall and graze beef cattle so we can evaluate the economic impact of this practice," explains Talon Becker, a commercial agriculture specialist with U of I Extension.

These grazing trials will be set up using the latest technology in livestock production, starting with drones to mea-



NO FENCES? Perimeter fences will remain, but inside fences like the ones in this model farm won't be needed at the U of I Farm of the Future. The farm will use a virtual fencing concept

sure forage mass. Italo Braz Goncalves de Lima, with animal sciences at U of I, will help implement and manage assistive technologies.

VIRTUAL FENCE
The trials will use virtual paddocks. No, cows won't use a computer to locate virtual fence lines. They will wear solar-

powered collars that receive and transmit signals. An app allows you to set boundaries for them.

Because you can move the fence easily, the technology is ideal for rotational grazing, where you may want to move animals often as they graze off small areas of the pasture.

Currently, five companies offer virtual fence technology, with a similar concept used by each one. "We see this as another tool in the toolbox for someone wanting to do rotational grazing," Goncalves de Lima. "It should let you do a more effective job of utilizing pasture."

Don't worry — recommendations still call for a physical fence on the perimeter of the field. "We're going to make sure we have a perimeter fence before we turn cattle out and begin controlling where they can graze with virtual fencing," Goncalves de Lima says.

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ROBOT DOGS

Goncalves de Lima expects robot dogs will help train and corral cows on the Farm of the Future. He and associates are already experimenting with a quadruped robot dog from Unitree Robotics. He says list price for models that work for this application start around \$1,850. A quick tour of the Unitree website indicates that price and capabilities for these robots vary widely.

“These robot dogs have excellent mobility, and we intend to use them for data collection,” the animal scientist says. “We should also be able to collect data with virtual fence collars.”

Goncalves de Lima believes robot dogs will eventually be efficient at helping move cattle from one virtual paddock to the next. Right now, still in the infancy stages of using robots, researchers are trying to answer simple questions. How will cattle react? Will it be a positive experience for them?”

“So far, we have shown that cows won’t charge and destroy them like some feared,” he says. “As we move forward, we want to make sure they don’t stress animals.”



NO BARK, ALL ACTION: This robot dog will get a real test once the beef herd is assembled to graze cover crops at the Farm of the Future at the University of Illinois. PHOTOS BY TOM J. BECHMAN

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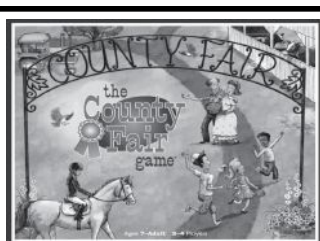


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