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ON THE COVER: Linda Li, import manager for Guangdong Jun Jie Agriculture Trading Co., Ltd., stands on the Great Fluency, a Chinese ship built in 2015 that carried sorghum from Texas to China, arriving at the Port of Machong mid-July 2016.



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Summer 2016, Volume 10, Issue 3

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## Editor's Desk

## Beyond the Back Fence

recently returned from my first trip to China. Taking off with an open mind, cameras in tow and a clean memory card, ok more like 20 of them, I was not sure exactly what to expect, but I



was excited. Excited to finally see what we have been writing about, to meet our buyers in person in their home country, to visit the end users and their operations and see the transport logistics from port to feed bag or wherever sorghum is moving through the value chain.

During the trip, I found myself on a duck farm in Southern China, interviewing a feed procurement manager who spoke very little English, and it was raining. It was a surreal moment—a moment that really made me appreciate my six years working for the sorghum industry and a moment that brought perspective to the aggressive work that has been done to create demand and move sorghum from places like my dad's farm in eastern New Mexico to a duck farm in China. I detail this market and China's journey to buying U.S. sorghum on page 14. I also stood on the ship seen on the cover of this issue and looked deep into each hold full of sorghum that originated from Texas. It took approximately 40 days to travel from port to port, and I was fascinated thinking about the farms the sorghum might have come from being cut just weeks before then.

In the weeks leading up to that trip, the Sorghum Checkoff launched our first sorghum consumer brand and website, taking the demand for sorghum on the dinner plate to center stage and creating a hub for consumer information. There is a lot of buzz surrounding sorghum in the food and beverage industry, and we are going to start including a recipe in each issue for you to try—see page 28.

Demand continues to spike in perhaps less than usual places, and markets for sorghum are as strong and diverse as ever, but we also know and embrace the challenges we face as a farm community right now like low prices and increased regulations. National Sorghum Producers has submitted more Federal Register comments on various issues halfway through this year than all of last year, and we continue to call on you for your support. You will notice for the first time, we wrapped this magazine with a call to action on atrazine and propazine. I encourage each one of you to fill out the card and send it in to us. This is a fight agriculture cannot stand to lose, and it will not be the last—more on this on page 10.

As the voice of the sorghum industry, we are committed to going to battle on your behalf to keep the tools you need to succeed and to meet the demand we are working to create and keep. We are also here to ensure the sustainability of our industry, and in our next issue we will share some tips and actions in process to do just that. I would also like to hear yours.

Jennifer Blackburn

NSP External Affairs Director

## Capitol Hill

## Trade Policy Work Complicated, But Necessary

By Julia Debes

rade is simple in its most basic form. Like a lemonade stand on a hot summer day, there is a cup for sale and a thirsty buyer in need. International trade policy, in contrast, is far more complex and complicated to understand, but negotiations oceans away can have a substantial influence on prices back at home.

"We have much more capacity and ability to produce more than our domestic market demands," said Floyd Gaibler, U.S. Grains Council director of trade policy and biotechnology. "Ultimately, trade policy is all about effectuating trade so that grain sorghum and other commodities can go where the market demands them."

Sorghum producers saw the significance of exports last marketing year. Traditionally, the export market accounts for roughly 35 percent of the demand for U.S. sorghum. In 2014/2015, however, that share jumped to more than 75 percent of total demand, driven by Chinese purchases. More sorghum than ever was exported—352 million bushels valued at \$2.1 billion.

Export demand will rise or fall based on price as well as other supply and demand factors. But, trade policy work underpins that demand, ensuring U.S. sorghum farmers have access to both long-term and opportunistic markets and compete with other sorghum-producing countries on as level of a playing field as possible.

#### Trade Agreements: Large and Laborious

On a scale far larger than a lemonade stand, multilateral trade agreements are laborious efforts. But, Gaibler said improving market access and minimizing non-tariff barriers through these agreements is important to the long-term success of U.S. agriculture.

"The importance of trade is exemplified by the fact that we continue to grow our exports and continue to maintain a positive surplus," said Gaibler. "Agriculture is one of the few sectors of the U.S. economy that can consistently do so." To illustrate, Gaibler explained the U.S. exports agricultural goods to more than 100 countries around the world. However, more than 50 percent of those exports go to the 17 countries with which the United States has a free trade agreement.

While beneficial in the long-term, these agreements are difficult to negotiate and enforce. Dale Artho, Texas Panhandle farmer, founding board member of the Sorghum Checkoff and member of the USDA Agricultural Policy Advisory Committee, compared trade negotiations to playing three dimensional chess.

"There are so many moves on the negotiations side to get to the end goal," Artho said. "And when you have as many players as you have in terms of countries, including their own citizens and industries, you have competing interests across the board that are hard to resolve."

Even when nations reach agreements through international bodies like the World Trade Organization, enforcement is frequently a problem. For example, each country in the WTO agreed to an annual level of domestic support during the 1994 Uruguay Round that was to be reported annually and not to exceed that limit. However, according to a May report by DTB Associates, only 24 of the 162 WTO members had reported their domestic support levels through 2014.

WTO Agriculture Chairman Vangelis Vitalis compared attempting to discuss domestic agricultural subsidies without this reporting as "negotiating in the dark" and information reported is not always accurate as some countries regularly submit lower than actual levels of support.

"The issue here is while you can negotiate a trade agreement, they are not necessarily self enforcing," said Gaibler, emphasizing the importance of building, and utilizing, dispute mechanisms to bring grievances and resolve trade issues.

Participation in international trade organizations remains vital, however, despite the intricacies and difficulties.

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"The opportunity to be at the table is important," Artho said. "Because if you are not at the table, somebody else will be. And you may not like how they take care of your business."

#### Working to Support Trade

Opportunities to increase sorghum exports do exist outside of larger, multi-lateral trade agreements. National Sorghum Producers partners on trade include the Sorghum Checkoff, USGC, USDA's Foreign Agricultural Service and U.S. Trade Representative. Together, these groups work to maintain and open markets abroad for U.S. sorghum through discussions not only through larger, multilateral channels, but also at smaller, more personal trade missions.

Carlton Bridgeforth, Sorghum Checkoff board director and farmer from Tanner, Alabama, serves as a member of the USDA Agricultural Technical Advisory Committee for Trade in Grains, Feed, Oilseeds and Planting Seeds. He emphasized emphasized the importance of trusting these organizations to best represent farmers at the trade policy table. He detailed his own research into the GOMAI (Grain and Oilseed Market Access Index) report, which analyzes U.S. grain and oilseed access in foreign markets. Within the report, Bridgeforth uncovered several markets with preferential tariff rate quotas (TRQ), or an amount of grain that can be purchased duty free under a trade agreement for sorghum—one of which was Colombia.

Colombia has a TRQ of about 945,000 bushels (24,000 metric tons) for U.S. sorghum as designated by the U.S.-Colombia Trade Promotion Agreement. In the current marketing year, sorghum sales to Colombia have already exceeded this amount, meaning Colombia purchased sorghum outside of that duty free rate at a higher price. These above-and-beyond sales demonstrate a perceived value of U.S. sorghum in this market, justifying an upward adjustment in the TRQ from the U.S. producer and the Colombian buyer. Sorghum

representatives shared this information with the USTR's office on a recent trip to Washington, D.C.

Now, USTR, USGC and National Sorghum Producers representatives are working to increase the Colombia TRQ through U.S.-based staff, in-country representatives and Colombian importers. The work is even more important as the European Union and MERCOSUR (South America) countries are currently negotiating a free trade agreement that includes a TRQ of 27.6 million bushels (700,000 MT) of corn/sorghum, meaning MERCOSUR countries can import that amount of corn/sorghum duty free from the European Union. This provision would put U.S. sorghum at a significant price disadvantage in MERCOSUR markets, decreasing the potential for sales to Colombia outside of the United States TRQ like those this year.

#### Worth the Effort

TRQs are complicated to understand and monitoring trade negotiations can be more excruciating than watching paint dry on the walls, according to Bridgeforth. But, that does not mean doing so is not worthwhile.

"It is very hard to keep up with trade policy on a dayto-day or even a week-to-week basis, but it is so important in determining our price at the ports and to get that holistic picture of what is happening in the global economy," Bridgeforth said. "For me, it is worth the effort."

Overall, a continuous increase of competitive markets—whether achieved through large, multinational agreements or small, personal negotiations—is crucial to securing steady export demand for U.S. sorghum. This groundwork, even if it results in only small increases in exports, is particularly important in these years of low crop prices.

"The impact that trade has on my ability as a producer to survive is going to be tremendous," Artho said. "If we do not have access to markets, I do not know how we survive."



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## The Latest News, Straight From the Fields:



#### **Steven Albracht - Hart, Texas**

Heavy rains delayed his planting until May 31, but Steven's season is off to a strong start. His crop popped up on June 6 and has reached the 5-6 leaf stage with the help of mild weather, supplemental irrigation and some additional rainfall from June through July.



#### **Tim Fisher - Wynne, Arkansas**

After planting on April 17, Tim saw first emergence on May 1 and had a stand count of 120,000 plants per acre. Despite struggling with too much rain and high winds reaching 70 mph, his mile is looking great.



#### Earl Wetta - Garden Plain, Kansas

A rainy spring pushed Earl's planting to June 17, and he was able to plant in ideal conditions. Earl noticed emergence on June 23 and recorded a stand count of 34,000 plants per acre. His plants look good and seem on track despite a late planting date.

Follow along as Steven, Tim and Earl share ROI-driven techniques and inputs that lead to record sorghum yields. Go to SorghumShootout.com to learn more.



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## CROP PROTECTION IN THE EPA CROSSHAIRS

By Julia Debes

egulatory fatigue is striking farmers across the country. From Waters of the U.S. to pesticide regulations, the Environmental Protection Agency's continued use of flawed methodologies, fueled by activist agendas, threatens modern farming. Fighting against this now systemic practice of regulatory injustice is exhausting but necessary, especially in order to protect the crop protection products currently in the agency's crosshairs.

#### Registration Reviews Normal

Registration review is a normal process for every agrochemical, mandated by the Federal Insecticide, Fungicide, and Rodenticide Act. The reviews take place every 15 years with the purpose of updating science and risk assessments. According to the EPA website, the EPA's registration review process includes 724 cases involving about 1,140 pesticide active ingredients, as of Jan. 1, 2016.

"This is a strength of our system," said Joe Bischoff, vice president of the agriculture and natural resources team for Cornerstone Government Affairs. "The EPA does not just register a product and be done with it. They look at it again. Doing so is an inherent safety approach."

Throughout the registration review process, EPA is required to assess changes since the last review and conduct new assessments, according to the agency's website. In addition, the registration review must also include public review and comment as

well as consultation with other government regulators.

#### Shifting from Risk to Hazard

While agrochemical companies and agricultural associations plan and prepare for a product's registration review, the EPA is drifting away from a strong, science-based approach. Instead, the agency is setting dangerous precedents by emphasizing hazards and relying on handpicked science.

First and foremost, the EPA is zeroing in on a product's hazards, rather than a full risk assessment. Daren Coppock, president and CEO of the Agricultural Retailers Association, explained the differences in the process.

Hazard identification determines whether or not a chemical could cause harm, he said. Risk takes the assessment steps beyond by evaluating at what dosage harm would occur and if exposure would even happen in the environment.

"Risk assessment injects an element of reality into what otherwise is a purely chemical analysis," said Coppock. "But it is easier to sit at a desk rather than go out and get samples."

The EPA appears stuck on hazard identification. For example, the EPA released a draft biological assessment this spring for chloropyrifos, the active ingredient in Lorsban. The assessment modeled the product's potential effect on endangered species—more than 12,000 pages of text that included thousands of models. The nonsensical approach included modeling for species clear-

ly not associated with agricultural regions, including whales, which were listed as a species of interest for the state of Indiana.

In comments to the EPA on chloropyrifos, National Sorghum Producers stated, "The published biological evaluations read as if every effort was made to throw every possible worst case scenario at the chemistry and the use of fanciful models to reflect predetermined negative conclusions."

In addition to an over-reliance on theoretical modeling, the EPA also handpicks antagonistic studies. In the draft biological assessment of chloropyrifos, the agency utilized a single, epidemiological study rather than hard science.

"Epidemiology studies identify correlations, but they do not establish cause and effect," said Coppock. "EPA is relying more on epidemiology studies to make decisions instead of the hard science that they require registrants to perform and submit which does analyze cause and effect."

For example, an epidemiological study could compare getting in an automobile accident with consumption of pickles in the two months prior to the accident. The person in the accident may very well have eaten a pickle at least once in the last two months, but it is highly unlikely eating a pickle caused the accident.

In the case of flubendiamide, the EPA based its decision to cancel the product on a single epidemiology study by Columbia University. The

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study was not peer reviewed, even by the EPA itself.

The EPA also often relies on these theoretical models and hand-picked studies over in-field monitoring and data provided by registrants – the agrochemical companies who manufacture the product under review. Yet, as Coppock explained, the EPA dictates how the registrants collect and process the data the agency then ignores.

"Those protocols for those studies are stipulated by EPA," said Coppock. "EPA is designing the study and telling the company how to do it, making them pay for it and then collecting the data. They have to do the testing exactly as EPA laid it out or they have to do it again."

#### More Harm than Good

The EPA has a stated goal of protecting human health and the environment. But, the results of a shift away from a science-based risk assessment approach will leave growers with less crop protection products, more expensive alternatives as well as cause more harm to the environment.

"They are motivated by good intentions," Coppock said. "But, they just do not think it all the way through to what the impacts and consequences are going to be and what the cost-benefit tradeoffs are."

The initial consequence of the agency's actions will be a loss of products. Take the triazines—atrazine, propazine and simazine. The EPA justifiably evaluated the agrochemicals' potential impact on endangered species to establish a new level of concern (LOC). However, in the atrazine draft biological evaluation, the EPA lowered this LOC for aquatic life from the current 10 parts per billion to 3.4 parts per billion.

Once again, the EPA justified the drastic shift based on a mix of theoretical modeling and hand-picked scientific studies, ignoring the EPA's own 2012 Scientific Advisory Panel, which determined the LOC for atrazine could be more than six times

higher than the proposed level and still protect aquatic habitats.

Error becomes effect when agronomists translate this LOC to application rates. Atrazine is currently applied at 1-2 pounds per acre. This new evaluation would restrict application rates to 8 fluid ounces per acre, equal to roughly one quarter pound per acre. Or about a small drinking cup's worth.

Applications at this rate would render atrazine, and sandy soil alternative propazine, effectively useless on 90 percent of the sorghum acres in the U.S.—effectively eliminating the products. Even worse, farmers would be further limited on choices because atrazine or propazine are widely used in tank mixes to broaden the spectrum of weed species controlled and reduce the rates needed for more expensive and less preferable herbicides.

"From a sorghum standpoint, farmers would be limited to a very small number of products, very quickly," Tim Lust, NSP CEO, said. "That includes 10 of the 15 pre-emergence treatments recommended by K-State Research & Extension and seven of the 12 pre-emergence treatments recommended by Texas A&M ArgiLife Extension."

Replacing proven crop protection products with alternatives will be expensive for farmers, Lust said. Switching away from atrazine would add an estimated \$29 per acre for sorghum farmers. For corn, that cost could rise as high as \$59 per acre, according to a 2012 study by the University of Chicago.

"Farm programs typically amounts

to \$30 per acre, which we worry about a lot through the farm bill process," Lust said. "This is just as big as a farm bill and a serious matter for our organization and our growers."

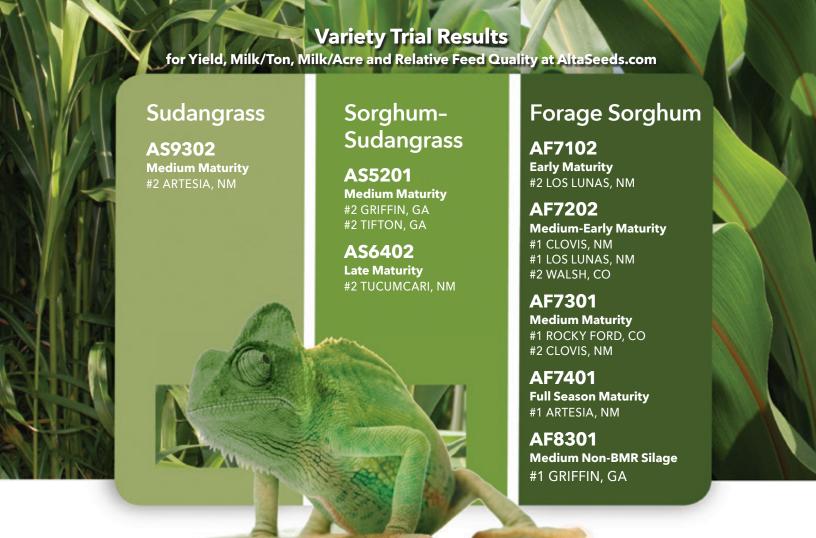
Lance Russell, a Kansas Grain Sorghum Producers Association board member who farms sorghum in three western

Kansas

counties said if he is required to switch products with the current low grain prices, a lot of dollars are at stake.

"Losing atrazine would be devastating, and that would be the nicest term I could come up with," Russell said.

(Continued on page 38)



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## Sorghum Abroad

## **China Strong**

## Feed grain demand and relationships help markets persevere

By Jennifer Blackburn

his whole market here in China is an actual success story developed by both the U.S. Grains Council and the support of the United Sorghum Checkoff Program. The development of the sorghum business in China is not something that was coincidental or just happened to develop by itself."

That's how Alvaro Cordero, USGC manager of global trade, describes how the China market came to be for U.S. sorghum as he stared out onto a busy Beijing highway at the conclusion of a one-week sorghum mission to China this July.

Cordero explained the USGC established a market profile in January 2011 for China that included sorghum. Legwork continued through 2013, discovering three critical elements for export opportunities to the country. One, there is a deficiency of feed grains in the southern part of China. Two, the fact sorghum is non-genetically modified reduces constraints and complications, and finally sorghum does not require expedited permission to import and has an established tariff rate compared to corn.

Cordero visited China early in 2013, setting things fully into motion, and the country made its first purchase of U.S. sorghum in April.

"That year alone within the last quarter of the year, [China] imported half a million metric tons, which was a very aggressive process in such a short time," Cordero said. "Lucky enough, our process moved very quickly, and with a very positive response, we moved into the millions of metric tons being imported."

Linda Li, import manager for Guangdong Jun Jie Agriculture Trading Co., Ltd.—the largest feed grain purchaser and first Chinese import customer of U.S. sorghum, said her company took steps to introduce sorghum to feed mills based on information provided by the Sorghum Checkoff through the USGC.

"Because they mostly use corn here in China, it is very expensive and our freight cost is very high," Li said, looking out from a ship deck with holds full of U.S. sorghum from Texas that recently arrived in the Port of Machong. "For sorghum, the test weight, or energy, is similar to corn, and its protein is also similar with corn. It's a good substitute product for corn, and the price is much cheaper."

Li emphasized that while price was the main factor in purchasing decisions, demand for sorghum from Chinese markets remains strong.

"I want to give [the U.S. farmer] confidence that the China market is here," she said. "We need sorghum, so don't worry about the market."

"We have talked with many feed mills. They think if the sorghum price is similar to corn, they will choose sorghum."

China has increased purchases from 2013 at 132,000 bushels to a record 328 million bushels in 2015. At publishing time for the 2016 marketing year, China had purchased 87 percent of the amount bought the previous year. While exports to China have been slow and steady, the market is on pace to match last year's purchases.

Cordero said the market is reaching a more level pace in the sense of price behavior, creating competition from other countries and allowing existing and new markets to come back into play. Twelve countries have purchased U.S. sorghum this year, up from four last year—in part, thanks to China.



Where is all that sorghum in Asia's most populous country going? Well, many places, but one market sector is seeing particular benefits utilizing sorghum in its feed rations—the Chinese duck industry. In fact, the duck industry was the first end-user of sorghum in China followed by the poultry and swine industries.

Bryan Lomar, USGC China director, said while there is still a learning curve for some parts of the feed industry, major end-users of sorghum have done their own internal research and understand how to use it, like it and know why—duck feeders fit the profile.

"Sorghum accentuates certain parts of the ducks that are very valuable," Lomar said.

"Primarily, ducks are produced not for their meat but for their body parts, which are

used for snack foods here. The neck, feet and gizzards are important parts of the duck," he said. "One thing we've heard is the duck's gizzard gets larger because of sorghum, and that's a valuable part of the duck."

Lomar said the two largest duck-producing providences are the two largest sorghum importing providences, and price and storability are two attributes sorghum has that make it an attractive feed grain for that industry. He said the U.S. is poised to continue to help meet China's feed grain needs and Cordero agrees.

"Only a few years ago, we were producing 5 million metric tons of sorghum in the United States," Cordero said. "Last year, we produced almost 16 million. The numbers doubled quickly, and that's a lot thanks to China."

After Cordero's initial visit to China in 2013, the Sorghum Checkoff has held at least three trade missions to China each year, the Texas state sorghum

organization has made a visit annually and Kansas has also conducted missions to China. USGC staff in country have focused on maintaining and expanding different markets while also sending or assisting teams of Chinese buyers in the United States—a necessary relationship building function.

"It allows us to be able to look into each other's eyes and be able to relate to one another," Cordero said. "We need to keep building communication with every single newcomer, every single new executive and every single new nutritionist that emerges to learn how to work with

> us, and we learn how to work with them at the same time."

Cordero said the U.S. is going to need these markets, and China, a country approaching 1.4 billion people, is

going to need the U.S. to produce even more sorghum for the future.

After his first visit to China, sorghum and citrus grower Dale Murden, past chairman of the Sorghum Checkoff from Harlingen, Texas, said the relationships built between Chinese purchasers and the USGC and Sorghum Checkoff have created trust.

'It takes work, and first impressions are sometimes hard to gauge, but I think we've worked really hard at building trust with the customers over here," he said. "I think the future of this market is as solid as we want it to be."

Murden said at the end of the day, people are people, regardless of where they come from, and building relationships and trust provide a bright future for U.S. sorghum in China.



I want to give [the U.S. farmer] confidence that

the China market is here. We need sorghum,

so don't worry about the market.

## From the Field

# Farmer CEO Series Frische Family

Sunray, Texas

ride in a farmer's operational success is unmatched, especially for the four Frische brothers who farm across four counties in the upper Panhandle of Texas.

While rotation plays a substantial role in the Frisches' business decisions, profit is paramount. As a result, they rely on Land.db, a software platform integrating regulatory compliance

management, profitability tracking, reporting, mapping and analysis. The platform enables the Frisches to see financial progress on a section of land in real time, allowing them to make deci-

sions for the current year and plan for the next. The Frisches work with the program to apply all expenses while prorating fixed costs based on specific crops. They use this process, coupled with advice from their banker, to set up cash flow documents.

The Frisches' operation in-

cludes several different ag-related businesses, including a cattle grow yard, fertilizer company and trucking businesses. But as Myles Frische points out, "Success did not come without planning."

The Frisches started their fertilizer company in 1983 as a way to generate additional income. They continued to aggressively add on to the

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We are set up for continued success. We strive for excellence and try to be the best we can be.

))

farming operation, picking up more land as well as building the fertilizer business. Today, their fertilizer company is a corporation. On the crop side, their family along with other partners make up general as well as limited partnerships.

The Frisches employ both family

members and other labor, including employees from the H-2A visa program. This program allows U.S. employers who meet specific regulatory requirements to bring foreign nationals to the United States to fill temporary agricultural jobs. In fact, nearly a dozen H-2A employees work on the Frische farm coming from as far away as South Africa each year. Myl-

es noted one of the H-2A employees has worked for the operation since 2006.

Despite a wide variety of business interests, the Frische family is on the same page about the future of their operation. With in-

creases in size and scale, this multi-family operation has instituted a succession structure to ensure their legacy passes from one generation to the next.

"We are set up for continued success," said Myles. "We strive for excellence and try to be the best we can be."

With increasing acreage, advanced technology and complex marketing amidst volatility, today's farmers are more like CEOs. The most successful farmer CEOs dedicate their time not only to raising the crops that feed, fuel and clothe the world, but also to investing in the tools needed to maximize both agronomics and economics to boost yields and secure profits. This series examines the best practices of these top producers.

**SORGHUM** *Grower* Summer 2016





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earning how to two-step may not sound like a marketing strategy, but the comradery shared during a night out at the Broken Spoke is part of building a personal relationship between sorghum farmers and Chinese sorghum buyers.

"Basically, we lived with the Chinese buyers for a week in Texas," said Wayne Cleveland, executive director of the Texas Grain Sorghum Producers Association and Board. "We showed them the sorghum industry is solid and that we are growing and we invest in our industry and our customers."

Each summer, international trade teams from many countries—like the Chinese team that traveled to Texas and Kansas in June—traverse the Sorghum Belt for an

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in-depth look at every aspect of the industry. This collaborative effort is one of the most effective tools in building international demand for U.S. sorghum.

"These buyers leave with a better understanding of U.S. sorghum production, helping build future demand," said Florentino Lopez, Sorghum

Checkoff executive director. "This trade mission is a great reflection of how organizations such as the U.S. Grains

Council, U.S. Department of Agriculture Foreign Agricultural Service, the Sorghum Checkoff and our state organizations work together to build and maintain market opportunities for

U.S. farmers."

more secure in that purchase. There is value in that.

If you have a relationship with the person you are buying from, it makes you more confident and

Jiang Junyang, USGC China Deputy Director located in Beijing. "I would say that is important and lets people feel confident in quality. That is a starting point for making a consideration to make a purchase."

recent Chinese trade team at his farm near McPherson,

By talkling with farmers face-to-face, trade teams

receive information they cannot access anywhere else. Team

"Anyone that comes over here sees how the crop is

members can put that firsthand look to work in improving

managed and sees how the quality is managed," said

grain purchases for their companies back at home.

Kansas. "There is value in that."

Turning that consideration into a purchase is exactly what happened with Guangdong Jun Jie Agricultural Trade Co., Ltd. The company was the first in China to

import U.S. sorghum based on groundwork augmented by trade team visits to the U.S. Today, Guandong Jun Jie is the largest purchaser of U.S. sorghum, buying about 80 million bushels of U.S. sorghum in 2015 with plans to import at least 60 million bushels in 2016. Where one company leads in a country, others may follow-as was the case in China. Overall, China has imported 38-76 percent of all sorghum produced in the United States.

supply chain. As a result, Cleveland explained teams visit grain elevators and ride on combines actively cutting sorghum. In addition to those activities, the Chinese team toured ports, talked with livestock nutritionists and researchers at Kansas State University and learned about the U.S. grain grading system at the USDA Federal Grain Inspection Service among other tours. Each experience instills knowledge and confidence in future purchasing decisions.

Many of the trade teams visiting the U.S.

have little experience with the U.S. sorghum

"The international buyer a lot of times has not seen the origin of sorghum before," said Joe Kelley, export manager for United Ag in El Campo, Texas. "Visiting really helps familiarize with the opportunities not just on the quality of the grain sorghum but also on the infrastructure that is available to support their trading decisions."

In addition to gaining sorghum industry knowledge, the relationships built between sorghum producers and sorghum buyers put personality to a product.

Whether you are buying a car or grain, I think if you have a relationship with the person you are buying from, it makes you more confident and more secure in that purchase," said Adam Baldwin, Sorghum Checkoff board member who hosted the

C&W COMMODITIES Southern Region Marketing Manager Dick Holland speaking with an ethanol trade team from Mexico.



TEXAS SORGHUM farmer Justin Mikeska speaking with a Chinese sorghum buyer.

"In 2013, the first cargo arrived in China imported by our company and now it has already been three years," said Li Ling, trade team participant and trade manager for Jun Jie. "Now everyone knows how to use it, and they think it is a very good energy source."

More than the economics or the knowledge gained, the interaction between producers and buyers—whether that is a two-step lesson or a combine ride—is an exchange neither party will likely forget. Sorghum farmer and trade team host James Kamas from Little River-Academy, Texas, says that international sorghum buyers leave with a better understanding of the sorghum industry as a whole.

"Obviously they are interested in our grain markets, and what little I can do to show them our operation, talk to them about our farming practices and all that can make a difference," said Kamas. "If that in a small way promotes their understanding of our farm, culture and economy and promotes the trade, I am all for it."













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## From the Field

# Farmer CEO Series Jay Hardwick

Newellton, Louisiana

stute financial management is imperative to farm profitability. During the early years, Jay and wife Mary managed and operated Hardwick Planting Company in Newellton, Louisiana, as a family farm. Once sons Mead and Marshall entered the operation and became partners, Jay and Mary's roles transitioned to CEO and managing partners.

While considering operational and management roles for their sons, both Jay and Mary evaluated skill-sets and

interests of Mead and Marshall. Having previous experience in corporate finance, Mead accepted the partner role of Chief Financial Officer/operator. For Marshall, a degree in agronomy and in-

terest in agronomic research, led him to take on the role of Chief Operating Officer/operator. Cross-training for each management role is also vital to the management philosophy of Hardwick Planting Company.

Proprietary programs and commercial software like QuickBooks, contribute to the Hardwick's ability to track their total cost and operate efficiently. The Hardwicks evaluate these programs with university enterprise budgets like those available from Louisiana State University and Mississippi State University. According to Jay, their approach is all-inclusive. Overhead costs such as cell phones to nuts and bolts, even vacations, are completely tracked to establish accurate financial benchmarks.

Through a three-phase approach, the Hardwicks evaluate the financial health of their operation weekly to annually. Costs associated with the crew and management are evaluated

((

Keep financial benchmarks simple.

**)** 

weekly. Production costs are evaluated monthly and compared to yield potential for each crop. Finally, once harvest is complete, the Hardwick's conduct their annual review to determine efficiencies and deficiencies with the operation for the past growing year.

Keep financial benchmarks simple. That is how the Hardwick's establish their benchmarks prior to each growing season. With the ability to review their cost of production and compare five or 10 year historical averages per field, the family can then estimate their operating costs each growing season.

Knowing their actual cost of production further permits the Hardwicks to anticipate how much of each crop to book for the upcoming growing season.

The Hardwick's crop portfolio consistently contributes to their diversification alongside ownership in their local gin and cooperative. The

> family contract produces seed wheat for Pioneer Seed and will consider custom cotton picking during fall 2016. They also manage bottomland hardwood timber on

their family land.

Looking forward, the Hardwicks will evaluate the market potential for specialty crops like food quality sorghum. This interest has led them to further evaluate identity preserved grains and oilseeds that could meet the rising global demand. Further, they will evaluate the necessary handling systems associated with each crop to determine level of investment, cost of operation and maintenance.

With increasing acreage, advanced technology and complex marketing amidst volatility, today's farmers are more like CEOs. The most successful farmer CEOs dedicate their time not only to raising the crops that feed, fuel and clothe the world, but also to investing in the tools needed to maximize both agronomics and economics to boost yields and secure profits. This series examines the best practices of these top producers.



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## Mu Life Market PUTS SORGHUM CENTER STAGE

By Sydney Nelson

onsumers have shifted toward selecting more delicious, healthy food products and even evaluating a product's environmental impact before purchasing. With scientifically backed products, strict food safety measures and a complete knowledge of the sorghum industry, Nu Life Market is satisfying these growing consumer demands with food products made with sorghum.

Earl Roemer, president and founder of Nu Life Market, is a fourth generation farmer with more than 30 years of experience in nearly every aspect of production agriculture. Roemer recalled the influence of serving in several different leadership positions in the sorghum industry, including as a research committee member for National Sorghum Producers. He said those experiences opened his eyes to the untapped potential of sorghum.

"That is really when all this began," Roemer said. "My connection with NSP and that board also connected me

with some of the top cereal scientists."

That included Dr. Lloyd Rooney from Texas A&M University, who Roemer credits with helping him progress in his understanding of the opportunities sorghum has in the food industry and helping to set the science foundation that Nu Life Market still operates by today.

"I think of Dr. Rooney as the founding father of food-

type sorghum here in the U.S." Roemer said.

Nu Life Market started with the purchase of a large piece of property, in the 1990s, near Roemer's family farm in Scott City, Kansas. The property contained the infrastructure and buildings needed for the operation, including roughly 125,000 bushels of grain storage on site. As Roemer established the business, Nu Life Market emphasized the development of scientifically sound, gluten-free milling and baking practices.

"We started out very small with just a few employees," Roemer said. "But from the very beginning, science and food safety have been the cornerstones of this company."

#### **COMMITTED TO FOOD SAFETY**

This commitment is evident in all areas of production, which Roemer credits to Nu Life Market's employees.

"We have managed to assemble a tremendous staff

for each one of the disciplines here at Nu Life Market," Roemer said, "and I am most proud of that."

Building a company with professional, knowledgeable experts is imperative to success, especially for a company like Nu Life Market that provides products to consumers with food-related ailments. Nu Life Market maintains their facilities as free of gluten, dairy, peanuts and soy to help prevent potential cross contamination.

For example, consider individuals with celiac disease, a serious autoimmune disease triggered by eating gluten found in wheat, barley and rye. When a person with celiac disease eats food containing gluten, their immune system responds by damaging the finger-like villi of the small intestine. With damaged villi, the body cannot absorb nutrients into the bloodstream, which can lead to malnourishment.

Even a trace of gluten can cause a reaction for the most severely affected celiac patients, which Roemer said is one reason why Nu Life Market processes, cleans, inspects, packages and ships only the highest quality sorghum products from their manufacturing plant. Nu Life Market installed food safety and cross contamination safeguards as part of the company's Farm-to-Family quality assurance program.

"The program preserves the grains from the time the seed is planted to the point the finished product meets

the consumer's mouth," Roemer said.

With this quality assurance program, Nu Life Market controls all aspects of production, ensuring quality and

safety every step of the way.

"The Farm-to-Family program is about traceability and vertical integration," said Josh Deschenes, Nu Life Market national sales director. "The program adds another layer of safety, which is a big selling point for our larger clients."

Nu Life Market offers a selection of sorghum products ranging from Gluten Free All-Purpose Flour Mix to Gluten Free Pearled White Sorghum. The company even produces a Gluten Free Pizza Crust flour mix.

In addition to their own products, Nu Life Market works with large, multinational companies seeking new ingredients to fit their product development goals. Nu

Life Market can control the determinants that affect the particle size, particle distribution, starch damage, gelatinization, temperature and more. Each one of these specific factors affects how the sorghum is used to make different food products.

"We can tailor our products to fit the needs of each client based on the problems and challenges they bring to us," said Deschenes. "In many cases, they come to us with a problem, and we try to find a solution using sorghum."

#### **COMBINING COLOR AND CHEMISTRY**

Further expanding their sorghum repertoire, Nu Life Market uses three different types of sorghum to make their products-black, burgundy and white. Nu Life Market strategically selects each variety of grain sorghum from their large plant breeding program for the grain's specific traits.

"It is primarily about chemistry and the grain's ability to pass on its unique characteristics," Roemer said.

For example, black sorghum adds natural coloring to food products and has a high level of antioxidants—similar to those found in blueberries. Burgundy sorghum also has natural coloring properties and contains tannins like those found in red wine, which also provide a variety of secondary health

benefits to the consumer. In contrast, white sorghum has a neutral flavor, which Roemer said is perfect for the company's flour mixes.

To ensure no interruption in supply occurs for any of these types of sorghum, Nu Life Market has growers from several different regions of the country.

"Geographic diversity is the key," Roemer said. Nu Life Market's team of growers range from south-central Nebraska to the Texas Panhandle. Some of the top growers even contacted Nu Life Market themselves after using the company's products in their own homes for family members with celiac disease.

"They make the perfect growers for our business because they understand just how serious cross contamination can be," Roemer said.

In addition to an extensive grower network, Nu Life has its own plant breeding program and identity preservation program, both dedicated to preserving the inherent grain qualities and further exploring the possibilities of a base product like sorghum.

"The food business is very competitive," said Roemer. "You must understand all the science behind every aspect of production and offer a superior product to the consumer in order to be competitive in this industry. And that is what we bring to the table."

Using sorghum allows Nu Life Market to meet these needs from both consumers and their food

industry partners.
Sorghum is versatile, inexpensive and a whole grain, making it ideal for today's food conscious consumers. Its low environmental impact and economical price point also make the cereal grain attractive for utilization by large food companies.

"People may not be familiar with sorghum now, but it is about to be everywhere," said Deschenes, adding that consumers should watch for sorghum popping

up more and more in snack foods, baked goods and side dishes in grocery stores and restaurants nationwide.

All of these factors have come together, synergistically, to make sorghum the fastest growing grain in the food industry.

"No other grain is experiencing this type of growth," Roemer said.

And companies like Nu Life Market are setting the standard for sorghum products in today's market and for years to come.





## **Kansas Sorghum Producer Delegation Travels to China**

delegation of Kansas sorghum producers, led by the Kansas Department of Agriculture (KDA) and the Kansas Grain Sorghum Commission traveled to China March 12-19, 2016, to promote coarse grains, assess current trends in the market and assist with rolling out the 2015/16 sorghum and corn harvest quality reports.

"Average household incomes in China are growing, and the demand for animal proteins is increasing. These factors, along with limited arable land, create a reliance on imports from countries like the United States," said Kerry Wefald, KDA director of marketing, advocacy & outreach. "In 2015, Kansas farmers, ranchers and agribusinesses exported more than \$403 million or 12 percent of total state agriculture exports to China. Of this total, \$269 million were cereal grains."

The group's visit included briefings from the U.S. Grains Council, U.S. Embassy and U.S. Department of Agriculture Foreign Agricultural Service in China along with stops at an agribusiness operation, dairy, feed mill and milk processing facility. These meetings gave the group a chance to learn more about the Chinese market and to establish business connections in China.

While in Jinan, Martin Kerschen, Kansas sorghum farmer and Sorghum Checkoff board member, and Sarah Sexton-Bowser, Sorghum Checkoff regional director, presented their perspectives on sorghum production during the USGC's rollout of the 2015/16 sorghum and corn quality reports. The buyers and end users in attendance left the seminar with more information about the factors that impact U.S. crop quality as well as increased confidence in their ability to purchase the quality grain they need from Kansas and the U.S.

Kansas is the leading sorghum producer in the U.S. and China is a major market for Kansas sorghum farmers, making exports to China an important opportunity for growth for the Kansas sorghum industry. The KDA is pleased to work with the USGC on cooperative ventures which can expand these markets for Kansas sorghum producers.

The delegation traveling from Kansas included:

- Lance Russell, Hays, Leadership Sorghum Class Il graduate, Kansas Grain Sorghum Producers Association board member
- Nathan Larson, Riley, Leadership Sorghum Class II graduate, Kansas Grain Sorghum Commission board member
- Sarah Sexton-Bowser, Holton, Sorghum Checkoff regional director
- Martin Kerschen, Garden Plain, Leadership Sorghum Class I graduate, Sorghum Checkoff board member
- Pat Damman, Clifton, Leadership Sorghum Class I graduate, Kansas Grain Sorghum Producers Association & Commission staff director
- Gary Gantz, Ness City, National Grain and Feed Association director
- Kerry Wefald, Manhattan, Kansas Department of Agriculture director of advocacy, marketing & outreach

The trade mission was made possible by a State Trade and Export Program (STEP) grant, funded in part through a cooperative agreement with the U.S. Small Business Administration. The STEP grant program objectives include increasing the number of small businesses exporting and increasing the value of exports for small businesses who already export. Since the grant's inception in 2012, more than 30 Kansas small businesses have participated and achieved \$9.2 million in actual export sales, which supports the KDA's vision to encourage economic growth of the agriculture industry and the Kansas economy.

For more information about Kansas grain sorghum, visit our website at ksgrainsorghum.org.



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## SORGHUM PEACH SKILLET CAKE

You'll need a skillet to capture all the goodness of this dessert. Create the vanilla cake batter using gluten-free sorghum flour, arrange the peach slices on top and bake to a golden brown. A dollop of whipping cream adds to the yum factor.

#### What you'll need:

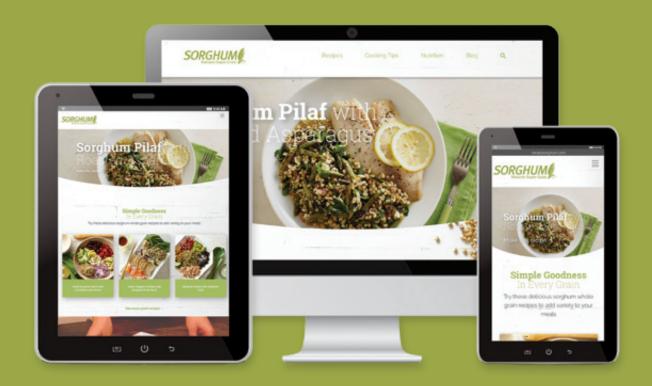
- 1 ¼ cup gluten-free sorghum all-purpose flour
- 1 teaspoon baking powder
- ½ teaspoon baking soda
- ¼ teaspoon salt
- 4 tablespoons butter, room temperature
- 2/3 cup granulated sugar
- 3 large eggs
- 1 teaspoon vanilla
- 1/3 cup low-fat buttermilk
- 2 peaches, peeled and sliced (may use canned)
- 2 tablespoons cinnamon sugar for topping

#### Directions:

- Preheat oven to 350 F. Prepare a 10-inch, ovenproof skillet with cooking spray.
- Whisk together sorghum flour, baking powder, baking soda and salt. Set aside.
- In separate bowl, beat butter and sugar with a mixer on medium speed until light and fluffy. Add vanilla. Beat in eggs and buttermilk. Add dry ingredients and mix until blended.
  - Pour batter into prepared skillet. Place peach slices in spiral fan on top. Sprinkle with cinnamon sugar. Bake until golden brown and a toothpick inserted in the center comes out clean—30 to 35 minutes.
- The batter bakes up around the peaches.
  Let cool slightly before serving. Cake can be served as rustic dessert topped with whipped cream sweetened with sorghum syrup or as a breakfast cake.

For this recipe and more, visit: SimplySorghum.com

# Presenting the go-to site for all things sorghum and food



## SimplySorghum.com

## What you'll find:

Looking for sorghum cooking tips? SimplySorghum.com's cooking directions library has you covered on how to cook sorghum on your stovetop, in a slow cooker and pressure cooker. A vast recipe catalog will enliven your weekly meal plans with side dishes, entrees and desserts sure to impress. Plus, you can find nutritional information on how sorghum fits into a healthy diet. The new site also showcases a list of where to purchase sorghum, brands utilizing sorghum in their products as well as chefs and restaurants currently using sorghum on their menus. Explore the new website and get inspired by sorghum.



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### SUGARCANE APHID: RESEARCH AND MANAGEMENT UPDATES

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## SORGHUM INDUSTRY EVENTS

Aug. 24-26 - International Sorghum Conference. Argentina

Sept. 19-21 - SICNA Machattan, Kennar

Oct. 24-27 - Explort Exchange Deboit, Michigan

Nov. 9-10 - NAFE Annual Convention. Remain City, Missouri

For more events, visit sorghumchedxoffcom/calendar

## CONTACT US



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## SONGIOM CHECKOFF MISSION

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hether in the high plains of Texas, the eastern shore of North Carolina or across China, pork production practices are similar. Producers have to raise a pig from a 3.5 pound birth weight to roughly 270 pounds as efficiently as possible, most of the time in less than 190 days. As a result, swine producers constantly seek the most efficient ways to maximize nutrition for their livestock, and sorghum is the predominant feed choice for growing healthy, high quality and market-ready hogs.

At Texas Farm, LLC, the company utilizes sorghum in their feed ration at both the Texas-based operation and their Japanese parent company. Jason Frantz, feed mill manager at Texas Farm, said the company did not realize the crop's full benefits at first when they started feeding sorghum more than 15 years ago.

"It was kind of a crop that was just around the area," Frantz said. "There was not much of a market for it, and there was little research done, especially with feeding it to pigs. It came down to the economics of it."

Frantz said the Texas operation discovered sorghum worked well for swine feed after analyzing and running meat quality tests. Texas Farm started feeding sorghum on a larger scale, and today, Frantz said

Texas Farm uses anywhere from 33 percent sorghum in starter feed to 65 percent sorghum in finishing feed, depending on the cost per ton of different rations and how other ingredients affect the nutritional aspect of each ration.

#### Selecting Sorghum for Swine

Using sorghum as part of the ration for swine feed has not always been a popular choice. Not that long ago, producers shied away from using sorghum due to increased levels of tannins in the grain.

"If you go far enough back, there was a lot of sorghum known as bird-resistant sorghum that had high levels of tannins," Terry Coffey, chief science and technology officer for Smithfield's hog division, said. "Those high levels of tannins would suppress the appetite of pigs, so you could not really use sorghum in your sow lactation diets or early wean diets."

Today, Coffey explained tannins are no longer an issue. Bob Goodband, Ph.D., Kansas State University swine nutritionist and recognized researcher, attributed the shift to a better understanding of how to process sorghum for swine feed.

"Grain sorghum's feeding value is much greater

than what it has been, and a lot of the studies show about 98-99 percent the nutritional value of corn," Goodband said. "I think the reason things have improved is that we have learned a lot about formulating on a digestible amino acid basis and particle size—how the grain is processed."

According to Goodband, sorghum has an excellent digestible amino acid profile and a high digestible phosphorus content. This means less inorganic sources of phosphorus have to be added to the diet, and in return, improved manure management and less environmental impact.

#### An Economical Choice

In addition to nutritional benefits, sorghum is a cost-effective feed. Companies like Smithfield, which feeds an average of 17 million pigs a year, need to minimize expenses while maximizing quality-making sorghum an economical alternative to corn.

"For us, we have become more interested in sorghum as an alternative to corn in markets where we raise pigs, and corn production is limited and cannot really meet our demands," Coffey said. "Sorghum has a pretty similar nutrient value to corn, so it is easy to substitute. We understand how to grind it and store it effectively, so it is really just a great option for us."

Coffey said Smithfield purchases sorghum from farmers on a bushel basis, paying an average of 95 percent the value compared to corn.

"Sorghum has lower cost inputs and a lower cost on seed," Coffey said. "The key becomes understanding the agronomics to produce high volume yields and a high quality crop."

In contrast, Texas Farm takes a contractual approach to help address market volatility. First, Frantz explained the company establishes contracts directly with local farmers, allowing the company to pay a slight premium, particularly at harvest. Frantz said Texas Farm sources about half of their feeding needs in this way.

Frantz further explained the contracts do not bind growers to a specific amount of bushels. Instead, the contracts require growers achieve a specified amount of acres, a more achievable and less stressful goal.

"It alleviates their risk if a storm comes through or it may not yield as great as they had hoped," Frantz said, "And yet they can still lock in a good price. It is a benefit to the farmer, and it is a benefit to us."

Swine producers small and large are learning sorghum's value. Sorghum combines cost effective produc-

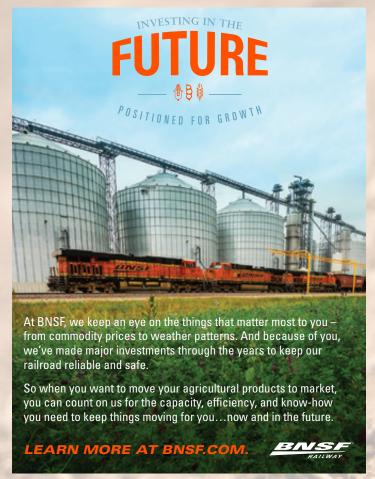


It is a benefit to the farmer, and it is a benefit to us.

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tion, smart marketing, improvements in processing and nutritional benefits. And the pigs approve too.

"Sorghum is a high quality cereal grain that is good for pigs, and pigs like it," Coffey said. "It can be used like any other cereal grain and can support good performance."



## Sorgonomics™

## **Nitrogen Cents**

By Jennifer Blackburn

he previous two Sorgonomics™ articles delivered similar messages urging growers to watch for and take advantage of profitable marketing opportunities. The late June rally in corn underscored the importance of this recommendation to aggressively price grain when possible.

However, what can producers do about the un-hedged portion of their crops? In this low price environment, producers have a limited number of options, including cutting costs and increasing volume. Both are important, but producers need to strike a balance between the two with regard to inputs where certain costs will drive higher volume and are only reduced at the expense of production.

#### Fuel for Growth

"When prices are low, one way to make more money is make more bushels of sorghum," said Rick Kochenower, national sales agronomist for Chromatin Inc. "You cannot make more bushels by shorting nitrogen. Set a realistic yield goal and commit to fertilizing for it."

Nitrogen (N) is the single most important nutrient for plant growth. The nutrient fuels everything from germination to grain fill, and a significant amount becomes protein in the head.

Kochenower recommends an aggressive N program of 1.2 pounds per bushel of yield goal. This strategy allows for some application and uptake inefficiency while enabling the plant to develop without N as a limiting factor. He also emphasizes basing N applications on a soil test and watching application timing.

"Efficiency goes up considerably if a producer spoon feeds his crop," he said. "With N management, the most important time is approximately 30 days after emergence. At this stage, head size as well as the number of berries on each head is being determined, and the plant is entering a phase of rapid growth and N uptake. It is important not to let N limit the plant."

N is also critical during the boot stage or just prior to heading. Ample N availability ensures good pollination, seed set and maximum grain fill. "If a producer is generous with N prior to planting, he will not be limited at 30 days or boot, and he can still sidedress," said Kochenower, adding a planned sidedress application allows producers to make in-season adjustments based on conditions.

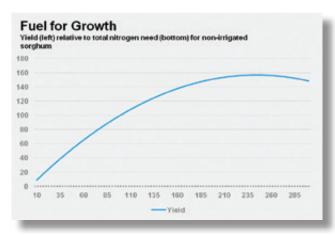
The amount of N applied using sidedress or fertigation should depend on the amount of N already applied prior to planting, soil type and amount of precipitation received. Significant precipitation can cause leaching, which necessitates more supplemental N during the growing season.

"On heavier soils, though not always optimum, an entire season's N need can be applied prior to planting," Kochenower said. "On coarser soils, a split application including sidedress is strongly recommended to combat leaching."

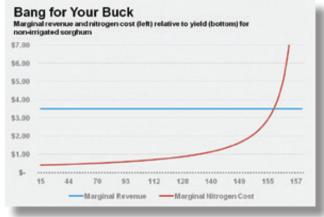
This type of inefficiency makes cutting corners risky. A sorghum plant needs a certain minimum amount of N to fuel growth as well as starch and protein development.

As with most agricultural inputs, some yield targets necessitate more N than others, and there is a point of diminishing returns where more N does not result in more yield.

For non-irrigated growers producing near last year's national average yield of 76 bushels, the minimum N for plant growth and development is approximately 0.9 pounds per bushel. In lower-yielding environments



▲ CHART 1 includes an N response function based on more than 500 samples from 11 trials managed by Dave Mengel, Ph.D., professor of soil fertility and nutrient management at Kansas State University.



around 40 bushels, this requirement falls slightly. Higher yield targets that approach 120 bushels in the eastern plains or Mississippi Delta need approximately 1.1 pounds.

Also keep in mind the physiological needs of the soil. Soil microbes will use a portion of the N applied, so even with perfect efficiency, some will never be available to the plant.

"Soil health is in focus right now," said Kochenower, noting the term signifies well-nourished microbes in addition to increased organic matter. "Not fertilizing sufficiently for crop needs will not only reduce yields but also will starve microbes and reduce soil health."

#### The Economics of Nitrogen

The data are clear—N improves yield. But beyond agronomics, the marginal cost curve in Chart 2 illustrates N is also a very cost-effective option for producers looking to increase volume to compensate for a lower price.

Focus on the low end of the marginal cost curve. The amount of N needed to increase yield from 15 bushels to 70 bushels will only cost \$0.45 per bushel, and the amount needed to increase yield from 15 bushels to 112 bushels will only cost \$0.52 per bushel. Few other options exist for increasing yield at this low price level.

Eric Burton, operations manager for Better Harvest Inc. located in Dumas, Texas, advises sorghum, corn and wheat producers on the marginal benefits of nutrient man-

■ CHART 2 shows marginal revenue and marginal cost curves based on Kansas State University trial data and an N price of \$0.50 per pound.

agement and split applications of N.

"Our growers are leaders in N management," said Burton.
"Their attention to fertility detail means they are able to realize marginal gains that often put them well above their county

average yield."

Long term, Better Harvest customers have averaged corn yields of 222 bushels compared to a county average of 197 bushels—an impressive 13 percent marginal gain from better N management.

"Timing is everything, and we often see a tendency toward over-fertilization in these very high yield environments when the crop cannot

be spoon fed," said Burton, commenting that this inefficiency is unacceptable with today's prices.

Over-fertilization is not a common problem in much of the Sorghum Belt, but producers should know higher applications of N come with added risk.

Microeconomic principles hold the optimum amount of N is applied when revenue per bushel is equal to the cost of one additional unit of N. In Chart 2, this threshold occurs at 156 bushels, the starting point of diminishing returns from N application. Notice the marginal gain for each additional unit decreases rapidly as yield goes up.

Keep in mind this function's point of diminishing returns occurs at 156 bushels likely because it is based on non-irrigated data. Above 156 bushels, moisture becomes the primary yield limiting factor and higher N applications exacerbate lack of moisture. While the point at which this detrimental effect will vary based on environmental conditions, diminishing returns are eventually inescapable.

Producers should not fear more N or aggressive fertility management. But, effective producers must take steps to mitigate risk and consider other yield limiting factors.





# Crop Protection in the EPA Crosshairs

(continued from page 11)

Russell explained the loss of atrazine would require him to fundamentally shift how he farms as atrazine is a critical component of his ability to no-till, which he utilizes on all of his acres.

"The restrictions mean lower yields, less profitability, and higher soil and water erosion-basically going against everything the EPA stands for," Lust said. "And it hurts farmers in the process."

#### Farmers Voices at EPA

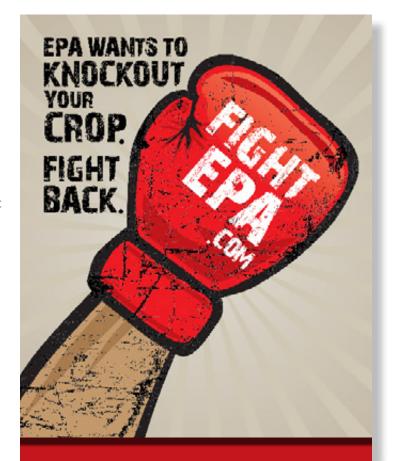
The precedents the EPA is setting in motion will have long-lasting effects on U.S. agriculture. Coppock compared the potential to the Ayn Rand classic "Atlas Shrugged."

"Well meaning regulators who thought they were helping regulated an economy into the ground and slowly killed it," said Coppock. "And we're watching the same thing happen today."

All hope is not lost, however. Producers can participate in public comment periods for these registration reviews such as the ones currently open for atrazine and propazine. The EPA did extend the public comment period of the risk assessments for these products to Oct. 4, 2016, allowing farmers more time to submit their own comments about how vital these agrochemicals are in their operations.

"Commenting is absolutely critical for farmers given the opposition we know is out there," Lust said. "Growers clearly understand how important these products are to their operations and we need them to share that information with the EPA."

Sorghum farmers cannot afford to lose these important crop protection tools, literally. Beyond any one operation's bottom line, allowing the EPA to set a precedent of rejecting sound science and arbitrarily selecting data to effectively limit application rates is dangerous—for farmers and for the very environment the agency is charged to protect.



## Don't forget to fill out and return the card on the outside!

Tell EPA to listen to the recommendations of their own Science Advisory Panels and more than 7,000 science-based studies that have consistently proven atrazine's safety.

Extreme environmental activists have no place in a regulatory agency's decisions.

Join us in this fight.

Go to sorghumgrowers.com/sorghumalert, and tell EPA you need atrazine and propazine

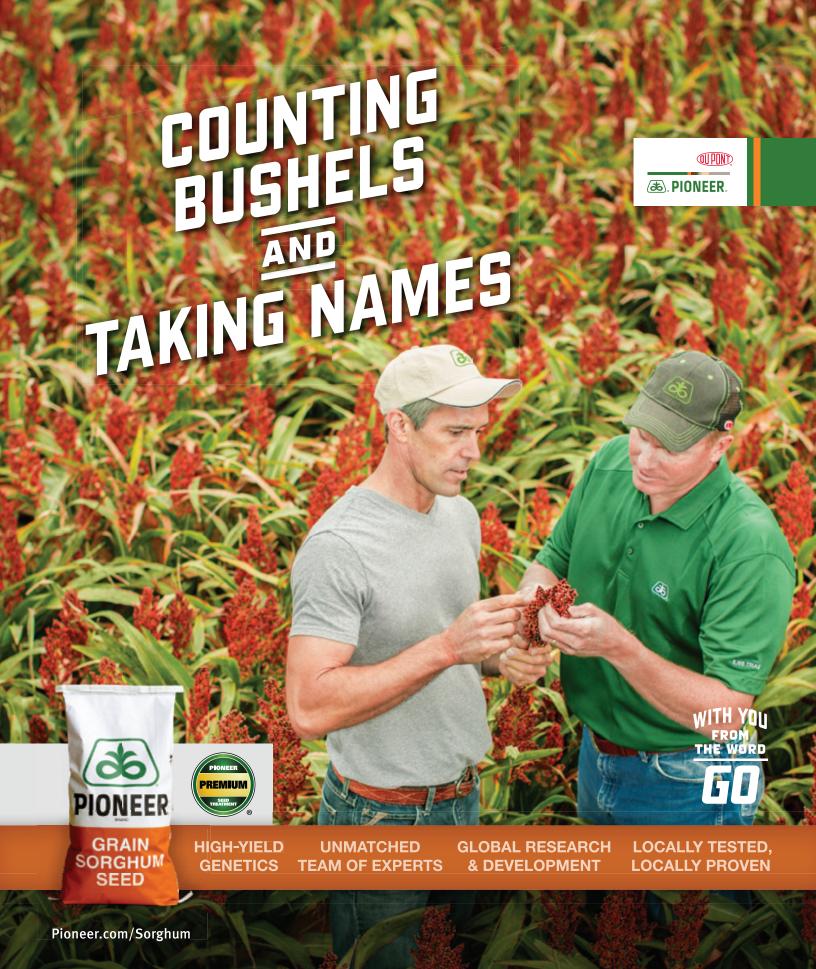
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## Meet the New John Deere 9RX Series Tractor

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