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Early Dialogue Critical for

PBI PLANT
BREEDING
INNOVATION

SOY FUTURES

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Business Focuses on
Conventional Markets

SUSTAINABILITY

Sustainability
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Farmer Works Many Angles

SOY FORWARD

What is Gene Editing, and
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INDUSTRY PERSPECTIVE

Biotech: Greater Precision,
Broader Choices



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The American Soybean Association (ASA) represents U.S. soybean farmers on domestic and international policy issues important to the soybean industry. ASA has 26 affiliated state associations representing 30 soybean producing states and more than 300,000 soybean farmers.



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Early Dialogue Critical for PLANT BREEDING INNOVATIONS

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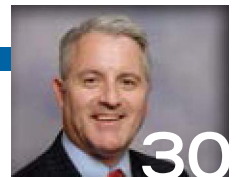
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SOY news

Studies Show U.S. Soybeans Have Best Quality In the World



Recent studies comparing soybeans of different origins continue to reinforce the understanding that U.S. soy provides the nutritional bundle needed to optimize animal nutrition and profitability. The full value of U.S. soybean products is found when buyers consider total metabolizable energy, batch-to-batch consistency, essential-amino-acid profile and digestibility.

Gonzalo Mateos, animal-science professor at the University of Madrid in Spain, conducted research on the nutritive value and energy quality of soybean meal for pigs and poultry. His team compiled data across eight consecutive years to map the energy and protein levels of samples of the world's largest exporters of soybean meal—the United States, Brazil and Argentina. In his peer-reviewed and published study, Mateos concluded that composition and quality of protein is the best indicator of nutrition. He said U.S. soybean meal is the world's top and most-convenient of the world's protein-meal supply.

Another study by Hans Stein, University of Illinois animal-nutrition professor, showed U.S. soybean meal had more digestible amino acids than that of other origins, and U.S. soybean meal has greater digestibility and less variability in composition and digestibility. Global research continues to demonstrate that soybeans and soy products can vary widely depending on their origin—but every year, U.S. soy can be counted on by nutritionists and managers to consistently maximize animal performance and reduce production costs.

Source: U.S. Soybean Export Council news release

Conservationists, Ag Industry Join Forces to Help Iconic Monarch Butterfly

Farmers For Monarchs, a broad-based collaboration aimed at addressing on-farm conservation efforts, launched this spring. The American Soybean Association (ASA) is a partner in the collaboration. This unprecedented, united effort by farmers, ranchers, landowners, the agriculture industry, conservation groups and others seeks to encourage and enable the voluntary expansion and establishment of pollinator and conservation habitat. The initiative includes planting milkweed and other habitat along the monarch butterfly seasonal migration route in North America.



U.S. Fish and Wildlife Services is currently evaluating monarch conservation efforts along the migration route. In June 2019, it will determine its final listing decision of the monarch and, possibly, its habitat, under the Endangered Species Act. A listing could potentially impact the way farmers manage their land in the future. Voluntary efforts to establish and restore monarch habitat could lead to reversing population losses, potentially rendering a listing unnecessary. Farmers can visit www.farmersformonarchs.org/ for more resources and information on conservation efforts.

Source: Farmers for Monarchs news release

BY THE NUMBERS



Jianxin Ma, Purdue University professor of agronomy, has found that a gene affecting bloom in soybeans also increases the crop's seed oil content.

Purdue Agricultural Communication photo/Tom Campbell

Study Suggests New Targets for Improving Soybean Oil Content

Scientists working to increase soybean oil content tend to focus their efforts on genes known to impact the plant's seeds, but a Purdue University study shows that genes affecting other plant parts deserve more attention. Jianxin Ma, professor in Purdue's Department of Agronomy, and his colleagues found that a single nucleotide polymorphism—a change from a single cytosine (C) to a thymine (T) within a gene called B1—eliminates bloom from wild soybeans. Surprisingly, that's not all the mutation did for soybeans.

"We found that the mutation within the B1 gene resulted in substantial increases of seed oil content in cultivated soybeans compared with the wild type," said Ma, whose findings were published in the journal *Nature Plants*. "It seems like the selection of this mutation by farmers was essential for making soybean an important oilseed crop that we have now."

The B1 gene does not seem to affect oil biosynthesis within seeds. However, the mutation that leads to loss of bloom heightens the activity of master regulators of oil biosynthesis in the endocarp of pods that appears to result in enhanced oil accumulation in seeds. The findings show that there may be genetic targets outside those responsible for seed traits that could affect soybean seed oil content. Ma will continue studying the genetic control of seed oil content mediated by the B1 gene, in particular the ways in which it interacts with other genes in a network to affect the pod and seed traits.

Source: Purdue University

8,055

The number of registered attendees, including a record number of 1,533 non-exhibitor, first-time attendees at Commodity Classic in Anaheim this year.
(Commodity Classic)

1 million

The number of women farmers working the land in the U.S.
(U.S. Department of Agriculture)

72 percent

The percentage that biodiesel reduces Greenhouse Gas emissions by compared to petroleum diesel.
(National Biodiesel Board)

89.5 million

The number of soybean area acres harvested in 2017.
(Soybean Success Report)

2.174 billion

The number of bushels of soybeans exported in the 2016-17 marketing year.
(Soybean Success Report)

Q&A with ASA's New CEO Ryan Findlay



Ryan Findlay became Chief Executive Officer (CEO) of the American Soybean Association (ASA) in February of this year. He is a native of Caro, Mich., where his family still farms row crops. He earned a degree in political science from Western Michigan University and an MBA from Northwood University in Midland, Mich. The last four years Ryan worked for the global agricultural company Syngenta, focusing on freedom-to-operate issues impacting farmers. Previously, his seven-year tenure with the Michigan Farm Bureau included work on two farm bills, international trade, climate change and regulatory issues. Ryan, his wife Gretchen, and their two children will be relocating to the St. Louis area, where he will work out of ASA's headquarters office.

Q. How did growing up on a farm prepare you for your role as ASA CEO?

A Growing up on a farm provides the unique perspective of understanding the emotional side of farming. There are obvious tangible benefits of experiencing the thrill of planting in the spring, the smell of harvest in the fall or the feel of grabbing a handful of beans as they're unloading at the elevator. The more unspoken side is the stress of growing a crop and marketing a crop. I believe being able to think like a farmer or put on the lens a farmer may view is helpful when dealing with legislation.

Q. What drew you to this role?

A Agriculture is in my blood. It's been a part of my life since I was born. I also love policy and politics. Being able to combine those passions while fighting for a cause bigger than myself is a dream.

Q. What are your priorities for your first year on the job?

A The American Soybean Association's Mission is to advocate for U.S. soy farmers on policy and trade. The list of priorities is long! We are making a concerted effort to discuss four issues everywhere we go.

1. Farm Bill: We need to pass a farm bill in 2018!
2. Trade: It is critical to maintain existing global markets for soybeans, as well as expand markets through new agreements.

3. Renewable Fuel Standard (RFS): Maintain the RFS while passing the biodiesel tax credit.
4. Infrastructure: Invest in our inland waterways, ports, rail, highway and rural broadband infrastructure as a means to strengthen the competitiveness of American farmers.

Q. What issue are you most interested in tackling?

A The technology in agriculture today is awesome, and there is more on the horizon. Whether it's breeding, crop protection tools, or data analytics, I believe in making sure farmers have access to technology. Not every farmer will be able to use every tool, but farmers should have access to responsibly use technology.

Q. Tell us a little about your accomplishments at your previous positions that prepared you to take on the role of CEO.

A Have the conversation. It sounds too simple, but just showing up to be a part of the conversation has been key to any success I've had. Show up at Congressional events until the Representative knows your name (hopefully in a positive reference). Be a part of the policy development process with your commodity group or agricultural association. (Hopefully this is your soybean association!) Talk to your neighbor. It's basic but powerful.

Q. What new ideas or approaches do you anticipate being able to bring to ASA?

A Develop a culture of excellence. We are going to try new things. There is a strong foundation beneath the American Soybean Association; we wouldn't have survived 98 years without a good base. There is a great energy in the staff and I know our farmer leaders have a lot of great ideas too. This doesn't mean we run wide open all the time, but we will aim to be a little better every time we act.

Q. What do you see as the greatest challenge facing soy growers at the moment and what steps will you take to address it?

A Trade! Maintaining market access in China is priority #1. We also need to negotiate additional trade agreements. As a native of Michigan, which has a strong negative view of trade through the auto industry, I respect the sensitivity with trade agreements. However, trade has been beneficial for American farmers. For decades we, as soybean farmers, have embraced trade as a great way to strengthen markets. We need to continue expanding agricultural trade. Let's be a part of the solution to improving our country's trade balance.

Q. What direction would you like to take ASA in during the next five years?

A A relentless focus on our mission "to advocate for U.S. soy farmers on policy and trade." This includes creating a regulatory structure which provides the crop protection tools farmers need. It's enabling plant breeding innovation to provide farmers with a variety of seed choices. Improving market access through international trade agreements. In short—maintain our focus as a policy association.

Q. What results would you like to see from President Trump's infrastructure initiative?

A Legislative movement! Rural America needs a bipartisan infrastructure bill passed and signed into law. While there are many aspects to infrastructure investment, I think we could all agree improvements to our inland waterways system are woefully behind and underfunded. Infrastructure is our competitive advantage when it comes to global markets; it's time to reinvest in these strategic assets.

Q. What will make for a successful farm bill for soy growers?

A Success is passing a farm bill in 2018 with evolutionary adjustments. Now is not the time to make radical changes or test theories. We need to maintain the risk management tools such as crop insurance and the Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs. Also, increased funding for Market Access Program (MAP) and Foreign Market Development (FMD) programs.

Q. As soy growers face new obstacles and uncertainty with trade deals, what is ASA doing to underscore the importance of these markets to farmers?

A We are taking a 360-degree approach to trade. Nearly 50 percent of U.S. soybeans are exported today—trade is important. We have engaged with coalitions such as Farmers for Free Trade, as well as Americans for Farmers and Families to help everyone understand the importance of trade. We are advocating for Congress to provide the resources to help us expand market access. We are encouraging the Trump Administration to initiate more trade agreements, which will be helpful to soybean exports.

Q. What else do you want soy farmers to know?

A Thank you for opportunity to serve the farmer. It is an honor to be a part of the American Soybean Association family.



Early Dialogue Critical for PLANT BREEDING INNOVATIONS

I By **Chris Crawford**

New plant breeding techniques, which can include genome editing and epigenetic modifications, are being used to expand traditional plant breeding tools and introduce new plant traits more rapidly and precisely.

Michael Gregoire, associate administrator for the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), said the agency likes to use the term "plant breeding innovation" (PBI) to describe gene editing techniques that essentially mimic what can be done in the greenhouse through traditional plant breeding.

"The term refers to a suite of new techniques—such as CRISPR and TALEN—that are increasingly being deployed by plant breeders to produce new plant varieties," he said.

It's important to note that as rapidly as these techniques are being developed, so is a unified effort to make sure consumers fully understand the difference between PBIs and genetically modified organisms (GMOs), and the far-reaching benefits PBIs can bring to the table.

"They have the potential to solve specific challenges facing U.S. agriculture, benefit global food security and contribute to environmental sustainability by improving crop quality, increasing yields and improving nutritional value," Gregoire said.

The USDA's APHIS currently reviews inquiries of new PBI developers on a case-by-case basis through its "Am I Regulated Under 7 CFR part 340" process.

"If there was not a plant pest involved, we've determined them not to be regulated," Gregoire said. "The 'Am I Regulated' process was established for developers wanting to better understand if their biotechnology products fall under the agency's regulatory oversight. We will have more to say about this in the future."

Bernice Slutsky, Ph.D., senior vice president of domestic and international policy for the American Seed Trade Association (ASTA), said one of the latest and most versatile methods used for gene editing is CRISPR-Cas9.

According to a genetics resource from the U.S. National Library of Medicine, CRISPR-Cas9 stands for "clustered regularly interspaced

short palindromic repeats and CRISPR-associated protein 9.”

The resource said CRISPR-Cas9 has become a popular genome editing method because it’s faster, cheaper, more accurate and more efficient than other current methods.

“CRISPR-Cas9 was adapted from a naturally occurring genome editing system in bacteria,” it said. “The bacteria capture snippets of DNA from invading viruses and use them to create DNA segments known as CRISPR arrays.”

These CRISPR arrays let the bacteria remember the viruses, and if the viruses attack again, the bacteria produce RNA segments from the arrays to target the viruses’ DNA.

“The bacteria then use Cas9 or a similar enzyme to cut the DNA apart, which disables the virus,” according to the U.S. National Library of Medicine resource.

For example, Slutsky said CRISPR-Cas9 can allow soybean breeders to silence a gene that makes the plant sensitive to a disease.

“This gene deletion would mean the plant was no longer sensitive to that disease,” she said.

Slutsky said it’s also important to mention that this process doesn’t introduce foreign DNA into a plant; it uses the plant’s own DNA to do the work.

“We’re saying these are breeding tools,” she said, “Doing much the same thing breeders have since farmers started selecting the best crops in their fields hundreds of years ago.”

Differentiating PBIs from GMOs

PBIs are different from GMOs, which are transgenic organisms that have been altered by adding genetic material from an unrelated organism.

Renee Munasifi, Washington representative for the American Soybean Association (ASA), who specializes in biotechnology, said this differentiation needs to start by how PBIs are described.

“I think generally, producers have a great story to tell,” she said. “They need to tell it better—why we use techniques, biotech or plant breeding techniques. They can be better stewards of environment while making safe, affordable products.”

Gregoire said USDA’s APHIS recognizes the need to better communicate with consumers about biotechnology.

In fact, he said Congress recently appropriated \$3 million to fund the Agricultural Biotechnology Education and Outreach Initiative, which calls on the USDA and Food and Drug Administration (FDA) to collaborate to provide education and outreach to the public on agricultural biotechnology, and food and animal feed ingredients derived from biotechnology.

“The goal of this initiative is to provide consumer outreach and education through publication and distribution of science-based educational information on the environmental, nutritional, food safety, economic and humanitarian impacts of agricultural biotechnology,” Gregoire said.

Interesting PBI applications

Jack Bobo, chief communications office and senior vice president for bioengineering company Intrexon Corp., said his company has been using genetic engineering in many agricultural applications.

For example, Intrexon’s subsidiary Okanagan Specialty Fruits has used gene silencing of polyphenol oxidase in apples to tell the plants not to rot.



Okanagan Specialty Fruits has used gene silencing of polyphenol oxidase in apples to tell the plants not to brown or rot. Gene silencing was used on the apple on the right. Photo Credit: Okanagan Specialty Fruits Inc.

“This is great if you want to keep fruit from bruising,” Bobo said. “If the apple is dropped, it will have some indentation but won’t bruise. This means there will be less finger bruising for growers, less bruising at retail and less browning when slicing the apples for kids.”

This spring, the company is adding non-browning Fuji apples to its offering of golden and Granny apples currently on the market. Bobo said 3 to 5 percent of new apple crops planted use Intrexon seeds.

Next up, the company is working to use its gene silencing technology to prevent browning in avocados and lettuces, he said.

Another of Intrexon’s subsidiaries, Oxitec has developed “Friendly Aedes” male mosquitos, which don’t bite or transmit diseases. When released, these Aedes aegypti mosquitos search for wild females to mate and their offspring inherit a self-limiting gene that causes them to die before reaching adulthood.

These mosquitos’ offspring also inherit a fluorescent marker that allows for better tracking and monitoring. They die along with their offspring so they don’t leave an ecological footprint.

(continued on page 10)



Salmon eggs pictured. AquaBounty Technologies Inc. uses gene editing to allow its AquAdvantage salmon to reach market size in half the time of conventionally farmed Atlantic salmon.

Photo Credit: AquaAdvantage

"This technology is different from insecticides, which don't allow for accurate tracking of population fluctuation," Bobo said.

An additional product that uses Oxitec's self-limiting technology and is of interest to soybean growers—an eco-friendly fall armyworm (FAW) solution—is being developed by Intrexon.

The self-limiting fall armyworm being developed contains a gene passed on by engineered males that specifically prevents female offspring from reaching adulthood, which reduces wild FAW populations and minimizes their ability to spread quickly across long distances.

Originally native to the Americas, fall armyworm invaded Africa in 2016 and rapidly spread to at least 28 countries, causing an estimated \$13.8 billion in losses of corn, sorghum, rice and sugarcane, according to a report from the Center for Agriculture and Biosciences International.

Another interesting gene-editing project comes from majority-owned subsidiary of Intrexon, AquaBounty Technologies Inc. and the company's AquAdvantage salmon.

Approved for sale by the FDA in November 2015, these genetically enhanced Atlantic salmon reach market size in half the time of conventionally farmed Atlantic salmon.

The U.S. currently imports more than 95 percent of the Atlantic salmon it consumes from Norway and Chile, Bobo said. Because AquAdvantage salmon are produced in the U.S., this reduces production costs and the carbon footprint associated with current salmon farming operations.

Bobo said AquAdvantage salmon will be available once the FDA finalizes its labeling guidance for the U.S. market on whether a product has been genetically engineered, which is expected by July. The company sold its first fish in Canada last year.

AquaBounty Technologies currently has a facility in Indiana that produces 1,200 metric tons of salmon.

Bobo envisions building a facility capable of producing 6,000 metric tons of salmon that could be an investment of \$100-150 million and create tens of thousands of jobs.

The technology adds a gene from Pacific salmon, which grow year-round, in Atlantic salmon that usually only grow in the summer and winter, he said.

"These salmon grow twice as fast as traditionally farmed salmon and require 20 to 30 percent less feed," Bobo said.

Bobo said Intrexon also is working on controlling traits in plants such as flowering. For example, the company has figured out how to turn the flowering of the Arabidopsis plant on and off and control flower color as well.

"Applications for this are interesting," Bobo said. "It could be applied in alfalfa if you don't want it to flower for harvesting. Also, alfalfa pollen can travel a long distance and organic growers could lose their certification if conventional pollen traveled onto their farms."

Bobo said the company is also interested in drought-tolerant traits that can be easily activated and deactivated.

"Our technology would turn on drought tolerance only when needed during a drought," he said. "That would be pretty exciting. And then you could spray the plants with an activator to turn this trait back off or on."

This could be a breakthrough technology with 1.2 billion people living in areas with scarce water resources.

Researchers at the Institute of Plant Biology at the University of Illinois announced a similar project in March, explaining they had modified a single tobacco plant gene that allowed the plant to use 25 percent less water with fairly normal yields.

That same month, another company, Calyxt, which specializes in gene editing for agricultural products, said it planned to launch a high oleic soybean variety later this year.

The company has contracted with 50 farmers in the Midwest, representing more than 10,000 acres planted of this new soybean.

The high oleic/low-saturated fat oil from this new variety of soybeans is designed to eliminate the need for hydrogenation. Because hydrogenation produces trans-fatty acids, the process needed to be changed, as the FDA said human food can no longer contain partially hydrogenated oils by June 18.

"The vast expansion of Calyxt's high oleic soybean variety, along with our strong grower retention year-over-year, signifies important advancements in our product offering as we prepare for the commercial launch of the soybeans later this year," said Federico Tripodi, Calyxt CEO, in a news release. "Calyxt is at the forefront of history when it comes to bringing to market crops with healthier characteristics and improved traceability that consumers want and need, and continuing to cultivate a dedicated, high-quality grower base in the upper Midwest region is key to our success."



Calyxt, which specializes in gene editing for agricultural products, says it will launch a high oleic soybean variety later this year.

Photo Credit: Calyxt

Advocating for PBIs

In the past year, USDA officials have traveled tens of thousands of miles to visit international trading partners and inform the U.S.'s approach to

advanced breeding technologies, Gregoire said.

"The United States is joining other countries, such as Australia, Argentina, Brazil, Canada and Chile in refining regulatory approaches to new plant breeding techniques," he said.

Additionally, Gregoire said the USDA's Agricultural Marketing Service is working through the public rulemaking process required under the National Bioengineered Food Disclosure Law with the goal of increasing consumer confidence and understanding of the foods they buy, while avoiding regulatory ambiguity for producers.

Munasifi said the industry needs to be more proactive than reactive in telling the public about PBIs.

"With GMOs, anti-GMO groups were talking to consumers before the industry had a chance to explain why they were using GMOs in the first place," she said.

In comparing PBIs with GMOs, Munasifi said, "We're talking apples and oranges."

Munasifi said it's also important PBIs are embraced so that more food can be produced to feed the estimated 9 billion people that will be on Earth by 2050.

"PBIs allow growers to do more with less," she said. "In soybeans, land for farm production hasn't increased but output has increased. Higher yields from more targeted growing can happen with less water and pesticide use."

She added that too stringent regulation of PBIs could limit developer competition to only the larger companies that can handle the expensive research and development required in the plant breeding process and squeeze out interested small businesses and universities.

Slutsky said that although there are no products of gene editing on the market today, ASTA has been actively reaching out to the food industry, discussing how to best communicate to consumers about PBIs.

She gave the example of researchers using CRISPR to develop low-gluten wheat, which would be incredibly useful for the growing number of people with gluten allergies.

Need leadership to promote PBIs

On April 25, 2017, President Donald Trump signed an executive order on "Promoting Agriculture and Rural Prosperity in America," under which he established an Interagency Task Force on Agriculture and Rural Prosperity.

The task force formally presented its findings and recommendations to the president in January, which included increasing public acceptance of biotech products and developing a streamlined, science-based regulatory policy for biotechnology.

"These recommendations are part of the impetus for our international outreach outlined above, and include leveraging the tools of modern technology," Gregoire said. "As part of the follow-up to the task force recommendations, the USDA will be looking into these issues."

Gregoire said the USDA is working hard to engage with its trading partners.

"Our goal is to foster technological innovation and remove regulatory hurdles up front, encouraging domestic and international market acceptance to the benefit of U.S. farmers and trade," he said.

"Through international dialogue we will aim to avoid any undesirable trade outcomes and ensure that U.S. producers have certainty in the global marketplace."

(continued on page 12)

(continued from page 11)

Munasifi said it's important the USDA, FDA and Environmental Protection Agency, which have different authorities related to PBIs, coordinate their efforts and policies moving forward.

"We've seen very positive signals from the administration," she said. "Now we need a statement of policy for plant breeding innovations and to get folks onboard internationally to have free flow of goods and technologies. There's a great opportunity here to get regulation on this technology right and do a better job getting the message out to consumers to avoid the public relations issues we had with GMOs."

Slutsky said the U.S. needs to take a leadership role in promoting PBIs, because like GMOs, they are considered an American technology—as the country is the biggest producer of biotech crops.

However, other countries are currently developing their own PBIs.

Take for instance Japan, which has poured substantial research dollars into gene editing for its popular food exports such as rice, tomatoes and tuna, Slutsky said.

Other areas busy researching plant gene editing include China, South America and South Korea.

Slutsky chairs an International Seed Federation working group on this topic, with all continents represented.

"Our main goal is to work towards science-based policies across all countries," she said. "We don't want country X to decide to regulate PBIs as GMOs and country Y does not. We think these applications are different from traditional GMOs."

Currently, Slutsky said the only country that regulates PBIs as GMOs

is New Zealand, and that stems from a court case requiring the government to do so.

"Many countries in South America are putting policies in place that if no foreign DNA is introduced, then they aren't considered GMOs," she said. "Australia has the same policy. So, lots of countries have stake in how PBIs are viewed compared to GMOs."

If consumers are resistant to PBIs like they were with GMOs, Slutsky said the primary impact would be on plant breeders and losing an important tool in their innovation process. This will leave farmers without the widest range of varieties to plant.

"Hopefully, by the time lots of PBI products are on the market, we will have developed a good base of trust with consumers," she concluded. ▣

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Policy At-a-Glance

ASA Policy Positions on Biotechnology & Soyfoods



BIOTECHNOLOGY

ASA supports Public Law 114-216, the National Bioengineered Food Disclosure Standard, which sets a uniform national standard that preempts the patchwork approach of individual state laws requiring labeling of what is commonly known as genetically modified organisms or GMOs. The national law requires mandatory disclosure of bioengineered food in accordance with regulations proposed by the U.S. Department of Agriculture (USDA). ASA is advocating for USDA to adopt 5 percent as the threshold of bioengineered substance present to trigger mandatory disclosure, emphasizing the purpose of the law is to establish a marketing mechanism, not a food safety standard. USDA is expected to have regulations finalized by July 2018.

ASA supports the definition of “bioengineering” found in Section 291, which excludes modifications that could have been obtained through conventional breeding or found in nature, and ASA believes that any rules or regulations promulgated by USDA to implement the law should adhere to the statute.

ASA supports efforts to update the regulatory process or Coordinated Framework for biotech traits provided any changes do not disrupt foreign markets and approval procedures by their governments.

ASA opposes broadening the definition of “products of biotechnology” to include traits derived through plant breeding innovations, such as gene editing, which would require them to undergo pre-market approval and prevent their widespread adoption in the market.



SOYFOODS

ASA supports a growing soyfoods market and a continuing commitment to deliver healthy food products made with soy. Soyfoods represents a \$4.5 billion market.

ASA opposes legislation that would restrict the marketing and branding of soymilk by requiring the Food and Drug Administration (FDA) to preclude the use of the terms “yogurt,” “milk,” or “cheese” for any item not created using the product obtained from milking hooved animals. The makers of plant-based foods are in compliance with current FDA regulations by using the “common and usual” name for the products, such as “soymilk.”

ASA opposes efforts by the Department of Defense to restrict soy in military dining. ASA is striving to educate the Department of Defense about the many reasons food companies incorporate healthful, functional, and cost-effective soy protein in meat products.

ASA supports the soy protein health claim for heart health, approved by the U. S. Food and Drug Administration (FDA) in 1999. It states that “25 grams of soy protein per day may reduce the risk of heart disease.” Numerous scientific studies published before and since the health claim was approved show that soy protein lowers LDL-cholesterol and that the totality of the evidence supports continued approval of an unqualified claim. FDA’s proposal to revoke the soy heart health claim is inconsistent with 12 other countries that have authorized health claims on soy protein and heart disease.

ASA in Action



(Left to right) American Soybean Association (ASA) CEO Ryan Findlay, ASA Secretary Kevin Scott, U.S. Department of Agriculture (USDA) Secretary Sonny Perdue, ASA Chairman Ron Moore and ASA Vice President Davie Stephens meet on the Hill to discuss soybean issues in March. Priority issues included trade, the Renewable Fuel Standard (RFS), the farm bill and infrastructure. *Photo courtesy of Bev Paul*

(Below) Soybean Leadership College attendees divide into teams for a Jeopardy-type game to explore ag leadership and board expectations. *Photo credit: Jordan Bright*



North Dakota delegate Eric Broten takes the floor to discuss American Soybean Association (ASA) policy resolutions during the delegates' session in Anaheim. *Photo credit: Steve Dolan*



(Above) U.S. soy leaders visited Pakistan for the first time in December. (Left to right) John Motter, chairman of the United Soybean Board's (USB) Strategic Management Committee; Pam Helmsing, U.S. Soybean Export Council's (USSEC) acting regional lead; USSEC Country Representative-Pakistan R.S.N. Janjua; and American Soybean Association (ASA) and USSEC Director Monte Peterson inspect U.S. soybeans as they're bagged for purchase at FAP grain terminal. *Photo courtesy of USSEC*



The 2018 class of ASA DuPont Young Leaders includes: James Wray (AR); Rick Dickerson (DE); Jonathan Snow (DE); Joshua Plunk (IL); Chris Steele (IN); Chris Gaesser & Shannon Lizakowski (IA); Kevin & Kim Kohls (KS); Jared & Kimy Nash (KS); Clay & Lindsey Wells (KY); Caleb & Jordan Frey (LA); Walter & Kristen Grezaffi (LA); Brian & Michelle Washburn (MI); Scott & Polly Wilson (MI); Adam & Melanie Guetter (MN); James Locke (MS); Tyler Clay (MS); Dane Diehl & Erica Wagenknecht (MO); Kevin & Heather Kucera (NE); Scott Langemeier (NE); Philip & Lindsay Sloop (NC); Logan Ferry (ND); Justin Cowman (OH); Kevin & Brianna Deinert (SD); Jordan & Samantha Scott (SD); Charlie & Bettye Jane Roberts (TN); AJ Teal (TN); Tanner Johnson (WI); Pat & Sheri Mullooly (WI); and Ann & Jeff Vermeersch (Ontario, Canada). *Photo Credit: Joe Murphy*

Soybean farmers representing the American Soybean Association (ASA) and the Ohio Soybean Association (OSA) gathered on Capitol Hill to meet with members of the Ohio congressional delegation on the importance of trade, renewable fuels and the farm bill. *Photo courtesy OSA*



Minnesota Soybean Growers Association (MSGA) Vice President Jamie Beyer (*left*) and American Soybean Association (ASA) Director Kurt Krueger from Minnesota (*center*) talk trade issues and the upcoming farm bill with U.S. Sen. Tina Smith of Minnesota (*right*). *Photo courtesy MSGA*

Farmers from 13 states graduated from the 2017-18 American Soybean Association (ASA) Leadership At Its Best program in Washington, D.C. The Leadership At Its Best program is sponsored by Syngenta and develops leadership, communication and advocacy skills in farmers who have already shown potential to be strong leaders through the positions they hold on their state soybean association boards. (*Front row, left to right*): Jamie Beyer, MN; Derek Helms, AR; Don Holbert, TN; Laura Peterson, Syngenta; and Greg Gussiaas, ND. (*Back row, left to right*): Ron Moore, ASA Chairman, IL; Ryan Rhoades, OH; Tim Bardole, IA; Andy Alford, KY; James Hereford, AL; Tony Mellenthin, WI; Brett Medlin, N.C.; Jim Martin, IL; and Gip Carter, MS. *Photo credit: Michelle Hummel*



American Soybean Association (ASA) President John Heisdorffer (*left*) talks to U.S. Department of Agriculture (USDA) Secretary Sonny Perdue about the impact of soybean trade with China in Anaheim, Calif. *Photo credit: Ryan Findlay*



WE ARE U.S. SOYBEAN FARMERS



SUSTAINABILITY NEVER GOES OUT OF SEASON

REDUCED TILLAGE

Customers prefer U.S. soy because it's sustainable. But demands for sustainability continue rising. Adopting a common practice like reducing tillage to control erosion and increase organic matter is another step forward in improving your sustainable footprint. Show your commitment to sustainability with a free truck magnet available at unitedsoybean.org/sustainability

Soy Checkoff News from the United Soybean Board

Soy Checkoff Helps Farmers Seize Profit Opportunities in Sustainability

Sustainability may be a word you're hearing more and more these days, but that doesn't mean it's a new concept. Farmers have been incorporating sustainable practices into their operations for years. How else would multi-generational farms exist and stay profitable today?

"You could make an argument that any operation in existence for more than a generation or two is sustainable," comments Chad Lee, Ph.D., an extension agronomist at the University of Kentucky. "These farms must be doing something successfully to remain profitable."

Even so, the word "sustainable," and its many variations, conjures up different ideas and emotions among farmers, and not all of them are positive. "Recently, the term sustainability has made many farmers nervous," says Lee.

Some believe sustainability requires drastic change. Some think it will take major investments. And others see sustainability as a fad that's here today but will be gone tomorrow.

While it's true that there's no "one-size-fits-all" version of sustainability across operations and climates, the other truths about sustainability are that it's achievable, worthwhile and here to stay.

The changing world of sustainability

The majority of today's grade-school students will eventually work in jobs that haven't even been invented yet.

That means for every little boy or girl who dreams of becoming a farmer, firefighter or football player, there are at least three more kids who will grow up to be something that was never a Halloween costume.

This can be an overwhelming concept to think about, but it's also very exciting. Our world is evolving every day, and every day, new opportunities to improve our ways of living present themselves to us.

Incorporating on-farm sustainability practices will become increasingly important in the future.

"It's going to keep growing as major companies come together to focus on sustainability," says Luther Smith, director of professional development and business relations for the American Society of Agronomy, the Soil Science Society of America and the Crop Science Society of America.

Field to Market is a great example of organizations doing just that.

An alliance of the supply and value chains, Field to Market's goal is to meet the demand for sustainably grown commodities. McDonald's, General Mills, Kellogg's and Walmart are just a few major brands that are members of this alliance, showing their dedication to continuous sustainability improvement.

This level of involvement is a testament to the future of sustainability.

Brands like Unilever and The Coca-Cola Company are just two examples of companies committed to making the sustainability switch. Commitments like these impact U.S. farmers by increasing demand for sustainable soy.

And while increased demand affects the long-term profitability of U.S. soybean farmers, increasing on-farm sustainability efforts can also have a more immediate return.

"Reducing water use and fuel consumption are both ways farmers

can improve their environmental sustainability," observes Smith. "But these are also ways farmers can improve their financial sustainability. A CCA (Certified Crop Advisor) who specializes in sustainability can identify these cost-saving practices to reduce expenses while also helping the farmer document the practices so he can market his sustainability down the road."

Together, these factors make it so farmers can't afford not to be sustainable.



Field to Market

As an alliance of the supply and value chains, Field to Market has a goal to meet the demand for sustainability grown commodities.

Guiding farmers to sustainability goals

While most U.S. soybeans are grown in a sustainable manner, because end users have options, continuous improvement is a must.

"Companies are demanding green chemistry now," says Greg Gibson, president of Synalloy Chemicals, a chemical producer and toll manufacturer. Many of these companies are committing to sustainability, however, definitions of sustainability and expectations vary.

Corporate sustainability reports by supply chain members are making it possible to define expectations at every link. These enable farmers to understand what customers want, focus on continuous improvement and deliver what is expected from meal and oil to grow demand for U.S. soybeans.

(continued on page 18)

Here are some highlights of a few corporate sustainability reports.

- American Bakers Association members developed a Sustainability Scorecard that enables members to calculate sustainability of production practices, landfill waste, total energy use and water usage. These benchmarks help members identify where they can become more sustainable, and provide an opportunity to compare and demonstrate production advantages of U.S. soy to stimulate demand.
- ADM recently partnered with Unilever, the World Wildlife Fund, the United Soybean Board, the Iowa Soybean Association and Field to Market to ensure the soybean oil used in Unilever's Hellmann's Mayonnaise brand is sustainably sourced. Growers enrolled in the program analyze how their management practices impact operational efficiency and natural resources, and report findings that satisfy Unilever sustainability requirements, which builds and sustains demand for their crops
- Bunge believes all agricultural value chains should be environmentally sustainable. They created business polices to eliminate deforestation, employed test methods that incorporate carbon and biodiversity protections, and they are enhancing the traceability and transparency of key supply chains over time. Sustainable farming practices of U.S. soybean farmers position them as a preferred supplier.
- Walmart collaborated with 15 large suppliers, representing 30 percent of their food and beverage sales in North America, to provide farmers with data and

tools for use in developing plans to optimize fertilizer and tilling practices in soy crop rotations. Walmart's pilot optimization program includes 2.5 million acres, which they say has the potential to reduce greenhouse gas by 2.3 million tons.

Helping farmers share their sustainability stories

It's an undeniable fact: consumers love technology. From smart phones to fitness trackers to DVRs, technology has become ingrained in our daily lives.

But are consumers equally accepting of technology in agriculture? The U.S. Farmers and Ranchers Alliance (USFRA) conducts an annual survey to capture such consumer perceptions, because this audience ultimately impacts food companies' marketing decisions. The 2017 survey found that technology in agriculture is perceived positively.

Approximately half of Consumer Food Connectors, which are top influencers in shaping food conversations, associate increased yields (55 percent) and increased efficiency (49 percent) with the use of advanced technology of farms and ranches. From GPS technology and precision techniques, to animal nutrition trackers and indoor housing monitoring, these methods can help farmers boost sustainable practices.

Unbeknownst to many consumers or even food companies, advances in agricultural technology now allow farmers to grow more food on less land and use pinpoint accuracy when applying fertilizer, water and pesticides.

It is critical to show customers how the technology used on farms and ranches directly benefits people and the planet alike, in order to sustain demand for our products.



GPS and precision technology in farm equipment allow farmers to use pinpoint accuracy when applying fertilizer and pesticides. Photo courtesy of United Soybean Board

USFRA is helping to fill this information gap by showcasing farmers' sustainability practices and use of technology through the SMART Farm platform.

This concept brings agriculture's story, featuring real U.S. farmers, to consumers and end users at trade show events (like the Consumer Electronics Show and Sustainable Brands), on social media and a 360-video experience.

In turn, the United Soybean Board will continue sharing agriculture's story to feed and food companies to show how technology allows farmers to be more sustainable while continuously improving the food supply. ■





WE ARE U.S. SOYBEAN FARMERS



SUSTAINABILITY NEVER GOES OUT OF SEASON

COVER CROPS

Customers prefer U.S. soy because it's sustainable. But demands for sustainability continue rising.

Adopting a common practice like planting a cover crop to slow runoff and increase soil organic matter is another step forward in improving your sustainable footprint. Show your commitment to sustainability with a free truck magnet available at unitedsoybean.org/sustainability





Farmers ‘Grow Beyond’ at Commodity Classic in Anaheim



(From left to right): American Soybean Association (ASA) Directors George Goblish, Bill Raben and Gerry Hayden pick up their packets at registration before Commodity Classic begins. *Photo credit: Steve Dolan*



American Soybean Association (ASA) Director and Commodity Classic Co-Chair Gerry Hayden (*third from right*) celebrates as he cuts the ribbon to mark the grand opening of the 2018 event. *Photo credit: Steve Dolan*



American Soybean Association (ASA) President John Heisdorffer (*center*) discusses top soybean policy issues for 2018 with emcee Mark Mayfield (*right*) during the General Session of Commodity Classic in Anaheim. *Photo credit: Steve Dolan*



(From left to right): American Soybean Association (ASA) Past President Ray Gaesser playfully grabs ASA Past President Johnny Dodson's sunglasses as he considers a bid called out by auctioneer/ASA Director Eric Maupin and spotter John Buck during the annual ASA Soy Social and Auction. *Photo credit: Steve Dolan*



Agri-Pulse's Spencer Chase (left) interviews American Soybean Association (ASA) Washington Representative John Gordley (right) at the ASA booth during Commodity Classic. Top issues for ASA in 2018 include trade agreements, infrastructure improvements and the Renewable Fuel Standard (RFS). *Photo credit: Steve Dolan*



U.S. Department of Agriculture (USDA) Secretary Sonny Perdue shakes hands with Cole Kremer, son of American Soybean Association (ASA) Director Brad Kremer, as soy grower leaders showed Secretary Perdue around the Commodity Classic trade show floor in Anaheim. *Photo credit: Steve Dolan*



American Soybean Association (ASA) President John Heisdorffer (left) presents Dr. E. James Dunphy (right) with the Pinnacle Award during the annual ASA Awards Banquet at Commodity Classic in Anaheim, Calif on Feb. 28. *Credit: Joe Murphy*



During the Night of Entertainment, ASA Director Wade Cowan (left) joins fellow Joint Venture Commodity Classic Committee member Martin Barbre (right) in throwing T-shirts to pump up the crowd for next year's show. *Photo credit: Steve Dolan*



Commodity Classic has something for the whole family, including a play area on the trade show floor that allows kids to take a break from exhibits and explore. *Photo credit: Steve Dolan*

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SoyFutures

Striking the Right Chord

| By **Dan Lemke**

Family business focuses on conventional markets

As a trained musician, Andrew Moore knows the importance of making diverse features work together in harmony. For more than a decade, Moore and his family have put those same concepts into practice on their Resaca, Ga., farm through several value-added enterprises focused on conventional crops.

Moore's grandfather Gus established Moore's Seed and Grain Farms in 1955. His sons, Joe and Tim Moore, joined the family farm full-time in the early 1970s and helped grow the operation. They raised cattle, broilers and hogs, and made feed for the livestock from their own crops. Moore's Seed and Grain Farms also produced and bagged certified soybean seed and increased their row crop capacity to over 4,500 acres of double crop production.

In 2006, the Moore family expanded their business and began processing oilseeds. They founded Resaca Sun Products, an expeller-pressed oil mill. Resaca Sun processes non-genetically modified soybeans, canola and high oleic sunflowers into oil and meal. When first established, Resaca Sun could process 10-12 tons of oilseeds per day, but capacity was expanded to 50-60 tons per day in 2009.

Key decisions

After earning degrees in vocal music and psychology, Moore taught special education for five years before returning to the farm to become the third generation involved with the



Andrew Moore, a farmer from Resaca, Ga., says while growing non-GMO crops isn't for everyone, the model works well for his family and he thinks they will continue to be sustainable.

Photo courtesy of Andrew Moore

family operation. Moore joined his father Joe, grandfather and uncle in the family business in 2008 and now serves as Resaca Sun general manager.

Not long after his return, the Moore family saw another opportunity and expanded their operation into feed production, forming Resaca Sun Feeds in 2011. The move opened more doors as over 90 percent of the raw ingredients used in Resaca Sun Feeds' non-genetically modified (GMO) feeds are sourced from Moore's Seed and Grain Farms and Resaca Sun Products.

"All of the crops grown on our farm are non-GMO, and we did that for economic reasons," Moore said. "With the processing we have, we could add value to our own crop because there was demand for non-GMO products."

Moore said initial feed demand came for livestock farmers seeking non-GMO poultry and hog rations for both farrowing and finishing. Recently, there has been growth in beef cattle feed demand.

The processing and crop production work in harmony. Moore said the farm rotates seven crops every five years, producing corn, wheat, oats, barley, grain sorghum, sunflowers, soybeans and canola. He said the family raised biotech crops for nearly two decades before realizing their market opportunity was in growing and processing conventional crops.

Resaca Sun is Non-GMO Project Verified, and all the seeds they process are sourced either from their own farm or from farmers within 30 miles of the Resaca plant, in nearby areas of Georgia, Tennessee and Alabama. Resaca Sun's oil, meal and



While there are market opportunities for identity preserved, non-GMO and organic crops, Moore says it requires increased management. *Photo courtesy of Andrew Moore*

feed products are sent to customers spread from Florida to Virginia. They also do some toll processing for farmers in the region.

A challenging course

The Moores recognized the importance of knowing where and how their feeds and feed ingredients were produced. Moore said in some ways, raising genetically-modified crops would have made things easier. He added he has nothing against biotechnology or those who raise GM crops, but for Resaca Sun and the Moore family, it was a business decision to plant conventional crops.

"I'm an advocate for agriculture," Moore said. "If consumers have the money to buy a product, someone is going to produce it."

Because Resaca Sun is non-GMO verified, they focus on preventing cross-contamination. Moore said they have about 1 million bushels of bin storage to keep all the crops separated. Being non-GMO verified requires additional record keeping. Resaca Sun has one staff person dedicated to filling out all the required documentation.

The decision to plant conventional crops was driven by customers. Moore said being located between several large population centers like Chattanooga, Tennessee and Atlanta, Georgia means there are plenty of consumers who are highly conscious about the food they're buying. The attention means the livestock farmers Resaca Sun serves demand the same transparency from the ingredients they're feeding.

"We're located in an area where the customer is demanding to know



Four generations of Moores live, work and play on the family farm established by Gus Moore in Resaca, Ga. in 1955. *Front row (left to right): Gus Moore; Joseph Moore and Andrew Moore. Back row (left to right): Tim Moore, Jacob Moore and Joe Moore. Photo courtesy of Andrew Moore*

where their food comes from," Moore said. "There's a push by a lot of consumers to get back to the farm without actually being a farmer. I can't blame them for asking questions about their food."

Not for the faint

Moore said there are market opportunities for identity preserved, non-GMO and organic crops, but it requires increased management. Although the Moores have been at it for decades, the path hasn't always been easy.

"It's working for us, now, and our longevity is helped by the fact we're in a positive location between two large urban areas. There's high demand for added value poultry and other products," Moore said.

Moore added focusing on non-GMO products and developing new marketing opportunities isn't for everyone. He said time is a factor, plus it requires space, separate storage facilities and testing capabilities to ensure the crop's identity is preserved.

"The markets may be available, but you have to develop them," Moore said. "The closer you can get to the end user, the better, but working with identity preserved or organic products does add to the headaches. For us processing the non-GMO crops is time consuming and it has made things more difficult, but we have added value to what we're growing, and the market continues to increase. We feel our business model works well for us and will continue to be sustainable." ▣

Do you know someone who represents the diverse, changing face of agriculture that should be featured in Soy Futures? If so, send an email to jbright@soy.org.

Issue Update

Reform of Biotechnology Regulation Moves Forward

| By **Renée Munasifi**

Farmers are no strangers to the double-edged sword of regulation. The regulatory systems at the federal and the state levels simultaneously provide barriers to farmer innovation and a framework to objectively confirm that farmers are operating in accordance with federal and state laws. They are at times both a headache and a security blanket. Nowhere is the dual nature of regulation more apparent than in the case of biotechnology. The very nature of the biotechnology sector centers on innovation, which requires a reduction in barriers to thrive, but in today's marketplace, the sector cannot operate without an objective and predictable regulatory framework.

Currently, that regulatory framework for biotechnology is split between three federal agencies: the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), the Food and Drug Administration (FDA) and the U.S. Environmental Protection Agency (EPA). New biotechnology traits are regulated and approved under the Coordinated Framework developed by these three agencies in the 1980s.

As the industry evolves, and the technology farmers depend on evolves even more rapidly, the regulatory framework has scrambled to keep pace, evidenced now by the ongoing discussion over the regulation of certain types of gene editing, like plant breeding innovations (PBIs). PBIs, which are materially different from

transgenic biotechnology and genetic modification in that it introduces no foreign DNA into the breeding process, is a technology that many in the industry say is the next big thing on the horizon for agriculture. These modern techniques are the natural evolution of traditional breeding methods using a more targeted and precise tool. The question for federal regulators is how—or if—the government should regulate this technology as compared to older methods or first-generation biotech counterpart technologies.

As part of that effort, APHIS proposed a rule in January 2017 to reform Part 340 of the Plant Protection Act to modernize the approval of biotech traits. On the same day, FDA published a Request for Information (RFI) on the regulation of gene-edited plants, asking for input on any associated risks. FDA's Center for Veterinary Medicine (CVM) published another proposal that would expand the agency's regulatory scope to include regulation of gene-edited animals.

The American Soybean Association (ASA) supported the positive message in the Part 340 proposal regarding certain gene-editing techniques like PBIs, however ASA's comments reflected the need to significantly revise the rest of the rule regarding biotech regulations because as written, it would have stifled innovation and increased the regulatory burden on the agriculture industry. ASA also provided comments on FDA's RFI on

gene-edited plants, arguing that applications of gene-editing like PBIs should not be required to receive pre-market regulatory approval because they are low-risk and similar to plants found in nature or developed through traditional breeding techniques.

Then, in November 2017, APHIS announced that the agency would withdraw the proposed Part 340 rule and reengage with stakeholders on a new rule. This development highlights the paradox of regulation: while farmers benefit from a regulatory framework that does not impede innovation, they still rely on a functioning and transparent system of regulation. Without a new Part 340 rule in place, as flawed as it may have been, there is a missed opportunity to modernize and streamline the regulations governing biotechnology that have remained largely the same for over three decades. A new rule can also clarify what is not regulated which, as ASA argued, should include plant varieties developed through gene-editing that could have been developed through more traditional breeding methods or found in nature.

The association has pressed the Trump Administration to send a positive message on the future of gene-editing and the regulatory environment, as well as engage on these issues internationally, where the public perception of gene editing and PBIs already faces a headwind of misinformation. While activists claim technology like CRISPR-Cas9 are simply GMOs (genetically modified



organisms) version 2.0, PBIs are not GMOs, and the industry will benefit significantly if we are proactive in educating consumers on the difference in these two technologies and how improving technologies in agriculture can benefit the consumer and the environment.

USDA is currently engaged on the issue, however, and on Jan. 8, 2018,

the department presented a report from the Interagency Task Force on Agriculture and Rural Prosperity which urges the administration to promote innovation and develop a more harmonized Coordinated Framework for the regulation of biotech. And, on March 28, 2018, USDA issued a statement saying, “USDA does not regulate or have any plans to regulate plants that could

otherwise have been developed through traditional breeding techniques as long as they are not plant pests or developed using plant pests.”

The administration’s statement distinguishing new techniques, like plant breeding innovation from transgenic biotechnology is exactly the science and risk-based approach that ASA has advocated for. It will allow farmers, small businesses, researchers, and others the exciting opportunity to pursue new and advanced ways to grow our food, fight plant pests and disease, reduce reliance of fertilizers and other resources, and respond to consumer demands to reduce impacts to the environment. We still have a lot of work to do, both in modernizing our regulatory system and educating the public on innovation in agriculture. ASA will continue to engage on these issues as they move forward. ▣

“Plant breeding innovations (PBIs), which are materially different from transgenic biotechnology and genetic modification in that it introduces no foreign DNA into the breeding process, is a technology that many in the industry say is the next big thing on the horizon for agriculture. These modern techniques are the natural evolution of traditional breeding methods using a more targeted and precise tool. The question for federal regulators is how—or if—the government should regulate this technology as compared to older methods or first-generation biotech counterpart technologies.” – **Renee Munasifi, ASA Washington Representative**

#SoyLeaders

Check out what's trending and what members of the soy family are sharing on social media.



It was great catching up with fellow soybean growers and discussing policy that will affect the trajectory of the industry. @ASA_Soybeans @KremerBrad

 @Kylebridge

There are 569,998 U.S. soybean farmers. That's a whole lot of wisdom and experience working together to move the industry forward. #FarmersLead #AgDay2018



 @UnitedSoy



You know what's crazy cool?! Cover crops!! This is not the modern farming you hear about it, but this is actual modern farming.

Connecting old school practices, with new school science to increase our environmental stewardship and decrease our footprint! #covercrops

 @UptownFarms

Trending

#Plant18
#RebuildRural
#TradeTuesday
#NAFTAWorks

5 Farmers to Follow

See farmers who are posting photos and videos of what's happening on their farm and sharing policy information important to soy growers.

 @waltonagseed
 @bret_davfarms
 @JESSteinkamp
 @DelmarvaCropQn
 @SHAF55

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Industry Perspective

Biotech: Greater Precision, Broader Choice

By **Candace Krebs**

Firms large and small are enthusiastic about what the latest biotechnology developments mean for their farmer customers.

"We can now analyze every single gene in a plant with sequencing and mapping technologies," lauded Monsanto Chief Technology Officer Robb Fraley while speaking to farmers in Iowa earlier this year. "We've also computerized a lot of the breeding combinations, and we're using artificial intelligence to actually predict which combinations will create the best hybrids."

Gene editing, already widely used in pharmaceuticals, snips out genes but doesn't introduce new genetic material so technically it's not considered a genetically modified organism. That speeds up regulatory approvals, reduces development costs and potentially allows for greater public acceptance.

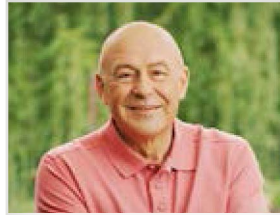
That shift is enticing more investment in the crop biotechnology space.

"On one hand we're seeing lots of investments in new startups and thousands of new companies," Fraley said. "At the same time we're seeing established companies doing new combinations that will up their game and allow them to invest in the future."

Boutique firm Calyxt will be one of the first to bring a gene-edited product to the marketplace with its low saturated fat soybeans. A high fiber wheat is also in the pipeline. CEO Federico Tripodi said the new tools are allowing his company to make popular food products healthier.

"The vast expansion of Calyxt's high oleic soybean variety, along with our strong grower retention year-over-year, signifies important advancements in our product offering as we prepare for the commercial launch of the soybeans later this year," Tripodi said.

Indigo Ag is another start-up that is using gene sequencing to create advanced plant microbials. Indigo CEO Dave Perry explains that his company's target isendophytes—the little bugs that make up the microbiome of the plant—identifying the healthiest ones and then



Robb Fraley, chief technology officer, Monsanto



Federico Tripodi, chief executive officer, Calyxt



Dave Perry, chief executive officer, Indigo Ag



David Thompson, national marketing and sales director, Stine Seed Company

incorporating them into its distinctive blue seed coating.

Like Calyxt, Indigo bundles its genetic innovation with identity-preserved marketing to connect farmers directly with end-users.

"Instead of asking farmers to pay us upfront for our seed treatment, we ask them to pay us a fixed amount of their production per acre post-harvest," Perry said.

Increased activity in the area of gene discovery also has positive implications for traditional seed breeding firms like Iowa-based Stine Seed Company.

"We are actually the buyer and the seller both, depending on the trait," explained David Thompson, Stine's national marketing and sales director. "We have a huge bank of corn and soybean germplasm, and because of that, we are often sought out by companies with traits of interest, particularly on the soybean side. There are all kinds of gene discovery firms out there, but when they identify that special gene, they don't have the high performing germplasm to put it into, or a way to test it in the field, or a path to the market. We offer all the rest of the pieces of the puzzle. I think what it all adds up to is more grower choice, which ultimately is good for agriculture as a whole." ■

SoyWORLD

WISHH Develops U.S. Soy Market in Myanmar, Cambodia

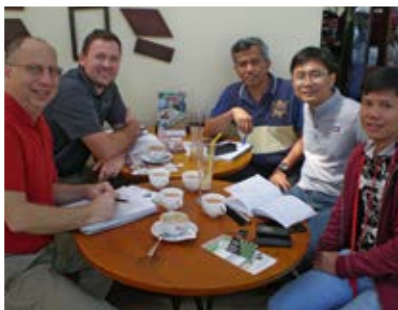
Soy milk and tofu manufacturers in Myanmar and Cambodia are preparing for their first product trials using shipments of U.S. food-grade soybeans.

Thanks to support from the U.S. Department of Agriculture's (USDA) Quality Samples Program, the American Soybean Association (ASA) World Initiative for Soy in Human Health (WISHH) facilitated a shipment of 14 metric tons of U.S. food-grade soybeans for full-scale trials in soy milk and tofu. Following a competitive bidding process, three Northern Food Grade Soybean Association (NFGSA) members shipped the seven varieties of high-quality soybeans for the trials by soy milk and tofu companies that WISHH has worked with in the two countries.

The North Dakota Soybean Council (NDSC) supported WISHH's activities, which resulted in the companies' interest in U.S. soybeans for the premium products they're developing. NDSC is also providing funding to send Northern Crops Institute Food Scientist Zach Liu, Ph.D., to train staff at the companies conducting the trials.

WISHH program committee member Matt Gast met the manufacturers as they prepared for product trials. The experience showcased how USDA's Foreign Agricultural Service (FAS) programs complement ASA/WISHH's state soybean checkoff funding to enable WISHH to trail blaze new markets for long-term soy trade in growing economies.

Gast, who farms near Valley City, N.D., joined WISHH in meetings with companies that will evaluate the U.S. soy. He also witnessed the markets for U.S. soy in food as well as feed, including aquaculture feed.



WISHH program committee member Matt Gast (second from left) and ASA/WISHH Asia Division Director Alan Pooock (far left) met with multiple food company representatives in Myanmar and Cambodia. ASA/WISHH has cultivated their interest in U.S. soy for its quality and other benefits so the companies are enthusiastic about conducting trials with U.S. food grade soybeans. *Photo courtesy of WISHH*

"Cambodia and Myanmar are significant opportunities for U.S. soy to meet their growing demand for high-quality soybeans," Gast said. "I met company representatives who see U.S. soy's value because it will allow them to produce a higher-quality product and avoid the cleaning and sorting required to remove stones and debris from their current supply."

Gast added USDA's support of WISHH's activities in these countries is an important partnership with North Dakota soybean checkoff investments.

"Together, we are connecting trade and development in Myanmar and Cambodia, which will also benefit

through availability of higher-quality soyfoods like tofu," he said.

USDA analysis found that Myanmar, sometimes called Burma, and Cambodia are home to growing middle-income consumer segments. Myanmar has 53 million people and Cambodia's population is 15.7 million. Together, the two countries' populations are nearly 11 times as large as the combined population of North Dakota and Minnesota, where the soybeans used in the trials were grown.

The U.S. Soybean Export Council (USSEC) has cultivated growth in the use of U.S. soybean meal for livestock and aquaculture feed in Myanmar.

"Our work in Myanmar shows how U.S. soybean growers have a unified market development strategy through the work of WISHH, USSEC and USDA," Gast said.

WISHH connects trade and development. As a trailblazer for trade, WISHH grows markets for U.S. soy farmers, and at the same time, improves lives and economic opportunities in developing countries. WISHH works with international companies and organizations that purchase U.S. soy. These buyers invest thousands of their own dollars to research and promote soy-based foods and feeds made with U.S. soy in emerging markets. Over the last five years, WISHH leveraged soybean farmer checkoff investments by a ratio of more than 6 to 1. ■

Sustainability

Sustainability Trendsetter: Tennessee Farmer Works Many Angles

By **Barb Baylor Anderson**

David Womack has spent his career as a cutting-edge soybean farmer and industry leader. While the Shelbyville, Tenn. producer has retired from row crop production, he still runs a few cows and remains an advocate for promoting soybean industry sustainability on many fronts.

"I started no-tilling soybeans in 1973 when it was a relatively new concept. My dad told me he didn't think it would work," Womack said. "At first, it didn't work. But we learned a lot of lessons along the way and were able to profitably no-till soybeans after some trial and error."

Farming longevity runs in the veins. The Womacks have farmed in the area since 1936, first with a grade A dairy, beef cattle, hog production and row crops. The Womacks left the dairy and hog business about 1980, and stuck with soybeans, corn and wheat and the cow-calf operation. They still have some cattle. Fourth-generation David Jr. now raises the corn and soybeans.

"When we first tried no-till, like most new things, we farmers shared ideas and attended no-till field days. We looked to the University of Tennessee for advice," Womack said. "We did not have the chemical arsenal then to manage no-till. Conservation included stopping soil erosion by cutting up cedar bushes and putting

them in the gullies to stop the water."

He added he never liked to cultivate.

"Farmers are conservationists," he said. "We depend on the soil for our profitability. The only time my son disks the soil now is to smooth it out and plant cover crops as another sustainable practice. All of the crops are still no-till."

Womack said his son has only enhanced the farm's sustainability using modern equipment and computers. David Jr. placed second in the no-till, non-irrigated corn class yield competition in 2017, only one-and-a-half bushels below the category winner's yield.

"That is proof no-till still works profitably. With better chemicals, it is successful," Womack said.

Womack tells others that sustainability is also profitability. "If you can make a profit, then you should grow it," he said. "My advice to farmers is to try a new sustainable practice on a few acres only because input costs are so high. You can't make many mistakes and stay in business."

For more than 30 years, Womack has been involved in soybean research and promotion. He was a director for the Tennessee Soybean Association and Tennessee Soybean Promotion Board, as well as for the United Soybean Board, American Soybean



David Womack is a long-time believer that promoting markets overseas in Asia and other areas contributes to the sustainability of U.S. soybean production. *Photo courtesy of the U.S. Soybean Export Council (USSEC)*

Development Foundation and the National Biodiesel Board.

"Seeing research we helped fund over the years have practical use on our farm is a pleasure," he said. "But sustainability extends beyond just profitable production practices. I was on the board when we first developed biodiesel to use up surplus soybean oil. That is also sustainability. And now export markets are just as critical. Soybean associations and checkoff programs have helped develop export markets, and we must continue to grow those opportunities." ■

"I started no-tilling soybeans in 1973 when it was a relatively new concept. My dad told me he didn't think it would work." – **David Womack, Tennessee Farmer**

SoyForward

What is Gene Editing, and Why is it Different?

By **Andrew W. LaVigne**

It's hard to read the news these days without coming across stories on gene editing or CRISPR. With revolutionary applications for humans, plants and animals, it has the potential to change plant breeding as we know it today. But what exactly is it, and maybe more importantly, what is it not? As the representative of the U.S. seed industry, the American Seed Trade Association (ASTA) is keenly interested in gene editing in the context of plant breeding innovation.

While our industry is extremely diverse, we have one fundamental thing in common: we are grounded in innovation and science. Plant breeders are problem-solvers, continually working to address new and emerging challenges to meet the needs of farmers, consumers and the environment. Plant breeding innovation holds exciting opportunities for our industry.

But this innovation didn't happen overnight. Plant breeding dates back thousands of years to when people first domesticated wild plants. Since then, scientists' understanding of agriculture has continued to progress. We made incredible breakthroughs in the 20th century in understanding the mechanics of genetics—DNA, the genetic code, and how to read whole genomes. Each advance has increased our efficiency in breeding better crops.

So what exactly is gene editing? First and foremost, it's important to start with the history of plant breeding. Today, with an increased understanding of genetics, and the capability to sequence plant genomes and link a specific gene to a specific characteristic, plant scientists are able to improve plants more precisely and efficiently than ever before. Evolving methods like gene editing allow us to achieve the same end-result as more traditional plant breeding methods, but in a more targeted way—allowing scientists to forgo multiple cycles of plant selection from a population of thousands of individual plants and move to testing elite lines sooner.

What is it not? In simple terms, gene edited crops largely aren't GMOs. These methods build on what plant scientists have been doing for years. And unlike most applications of bioengineering, these methods can work within the plant's family, using the plant's own natural repair processes and no foreign DNA in the final plant product.

Right now, plant breeders are involved in research using innovative breeding methods to address real challenges in row crops, vegetables and specialty crops to better meet the needs of farmers, consumers, and the environment.

Particular to soybeans, this research involves increased nutritional content, built-in disease resistance, and improved oil quality, without the years and years of trial and error it takes to get there through traditional breeding, and without the introduction of outside DNA that comes along with GMOs. These are more than just concepts; real research is going on in these and other areas right now.

However, in order to fully realize these and other exciting possibilities, and to ensure the widespread use of evolving plant breeding methods—including by researchers at public universities and smaller companies—we need a domestic and international policy climate that encourages continued innovation. Seed is the foundation of life and better seed means better life—for everyone. ■



Andrew LaVigne

Andrew LaVigne is the president and CEO of the American Seed Trade Association. For more, visit seedinginnovation.org.

Better beans. Many possibilities.

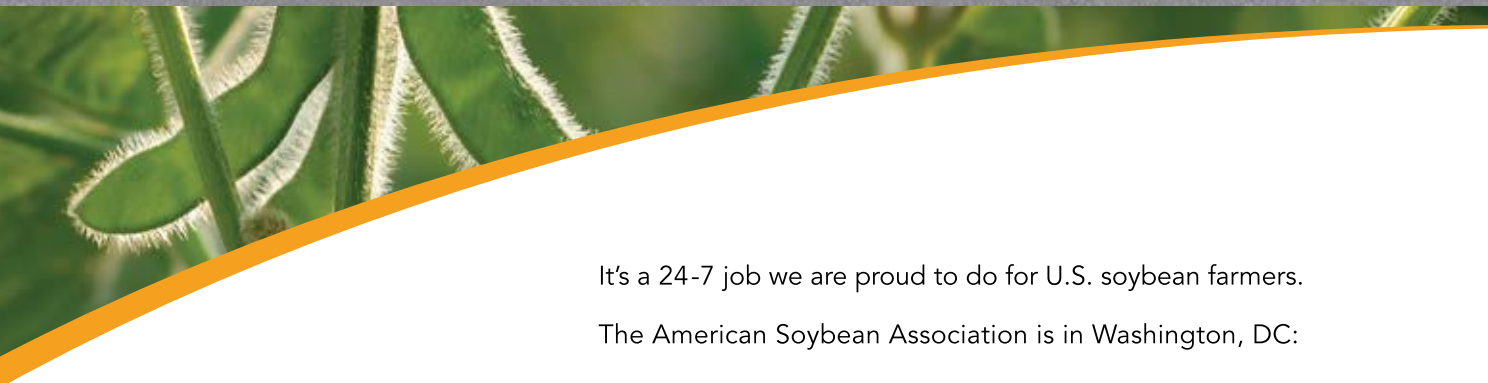
Tennessee farmers welcome the many possibilities by supporting research and actively learning about planting, growing, and harvesting a better bean for food, feed, fuel, and beyond.



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Policy makers take notice of ASA.



It's a 24-7 job we are proud to do for U.S. soybean farmers.

The American Soybean Association is in Washington, DC:

- Protecting soybean interests in the farm bill
- Fighting against burdensome EPA regulations
- Growing soybean trade opportunities

That's why ASA matters.

