

AMERICAN SUMMER 2017
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People. Policy. Profitability.

A PUBLICATION OF THE AMERICAN SOYBEAN ASSOCIATION

AQUACULTURE

and other
emerging
markets for

SOY

SOY FUTURES

New Markets Keep U.S. Soy Industry Competitive

SUSTAINABILITY

Sustainability Practices Prove Their Worth

SOY FORWARD

Minnesota Moves to B20 to Reduce Air Pollution

INDUSTRY PERSPECTIVE

Domestic Aquaculture Catches On

SHT 산업 Summer, 2017

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ASA
American Soybean Association®

Showcase Conservation On Your Farm



Tell us your conservation story and you could be a winner.

Are you using a reduced tillage practice on your farm? Do you grow cover crops? Have you taken steps to reduce soil loss or improve water quality? These are just a few conservation practices used on some farms today that help produce sustainable U.S. soybeans. If you are using one of these practices or others, tell us about your accomplishments and you could win a Conservation Legacy Award.

This annual awards program recognizes U.S. soybean farmers who distinguish themselves through outstanding conservation practices, while remaining profitable. All U.S. soybean farmers are eligible to enter. Three regional winners and one national winner are selected.

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- Potential opportunity for the national winner to join other farmer-leaders on a trip to visit international customers of U.S. soybeans.

Applications must be submitted by September 1, 2017. Visit SoyGrowers.com for application details and video features on past winners.



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The American Soybean Association (ASA) represents all 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.



AQUACULTURE: On the Verge of a Boom

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SOY news

Digestibility of U.S. Soybean Meal Featured in 'Journal of Animal Science'

An article recently published in the *Journal of Animal Science* reports the results of a case study on the effects of origin of soybean meal on the digestibility of amino acids. The study, "Meal Digestibility of Soybean Meal in Swine," was funded by U.S. Soybean Export Council (USSEC) and the Indiana Soybean Alliance.

The article, Chemical Composition and Amino Acid Digestibility of Soybean Meal Produced in the United States, China, Argentina, Brazil, or India, was co-written by, Dr. Hans H. Stein, USSEC consultant/professor of animal nutrition at the University of Illinois, and Vanessa Lagos, Ph. D. student in the Stein Monogastric Nutrition Laboratory.

Stein concluded his study in July 2016 and discussed his methodology and results at the 2016 U.S. Soy Global Trade Exchange. His team analyzed digestible, metabolizable energy by analyzing the feces and urine of pigs. The study showed that U.S. soybean meal had more digestible amino acids than that of other origins, and that soybean meal from the U.S. has greater digestibility and less variability in composition and digestibility.

To learn more, visit ussec.org.

Source: USSEC



Mexico

\$17.9 billion U.S. Agricultural Exports, 2016

Top 5 U.S. Exports

- 1 Corn (\$2.6 billion)
- 2 Soybeans (\$1.5 billion)
- 3 Pork (\$1.3 billion)
- 4 Dairy Products (\$1.2 billion)
- 5 Prepared Foods (\$1.0 billion)

Export Growth



#3

Among U.S. Agricultural Export Markets, 2016

Twitter: @USDAForeignAg Website: www.fas.usda.gov
Source: FAS Global Agricultural Trade System (GATS) (BCO) 4/16/16

United States Department of Agriculture
Foreign Agricultural Service



The U.S. Department of Agriculture (USDA) highlights the importance of ag exports to Mexico, with a new info graphic, advertising the fact that U.S. farmers sold \$17.9 billion worth of soybeans, corn, pork, dairy and other commodities to Mexico last year. That's a 64 percent increase over the past 10 years and farm groups attribute most of that growth to NAFTA, which cut Mexican tariffs on most U.S. farm goods to zero.

Source: U.S. Department of Agriculture

BY THE NUMBERS



Soy-Based Air Filter Wins Annual Innovation Competition at Purdue



The FiltraSoy team (from left to right) is Anderson Smith of Fort Wayne, Ind.; Samaneh Saadat of Iran; Andrew Huang of Potomac, Md.; and Sushant Mehan of India. The team won the competition's top prize of \$20,000, and an additional \$500 and the People's Choice award, which is determined by popular vote during the awards ceremony. Photo Courtesy of Indiana Soybean Alliance

A soy-based air filter for use in residential and commercial applications is the winner of this year's Student Soybean Product Innovation Competition at Purdue University. Finding innovative new uses for soybeans that meet a market need and ultimately increase demand for soybeans is the reason Indiana Soybean Alliance (ISA) has funded the competition since 1994. Team FiltraSoy met that goal with their winning product.

"Our farmer board invests soybean checkoff funds in this competition with the end goal of moving some of the soy-based products from the student labs to the marketplace and drive demand for our soybeans," said Tom Griffiths, ISA chairman and farmer from Kendallville, Ind. "For the past 20 years, we have seen that goal met several times and also seen hundreds of students introduced to the versatility and potential of soybeans as an industrial and food ingredient through this competition."

Preliminary testing of the soy-based HVAC (heating, ventilation and air conditioning) filter shows that it has the potential to be roughly 15 percent more effective than current high-efficiency HVAC filters already on the market while also being low-cost and environmentally friendly. The FiltraSoy team also implemented a novel use of cold plasma technology to charge the filter which makes it significantly more effective than the current high end technology being used in the marketplace today.

Source: Indiana Soybean Alliance

\$22.9 billion

The amount totaled from soybeans exported in 2016. (U.S. Department of Agriculture)

83.4 million acres

The number of acres of soybeans planted in 2016. (American Soybean Association)

33 percent

The percentage the aquaculture industry is expected to grow by 2021. (U.S. Soybean Export Council)

78 percent

The percentage of biotech variety soybeans grown globally (International Service for the Acquisition of Agri-biotech Applications)

60 percent

The percentage of soy crop exported globally. (American Soybean Association)

\$135 billion

The total of U.S. ag exports in 2016. (U.S. Department of Agriculture)

Find more statics about soybean production in the online version of the *2017 SoyStats: A Reference Guide To Important Soybean Facts and Figures*. Visit SoyStats.com.

SoyFutures

Emerging Uses, Markets Keep U.S. Soybean Industry Competitive

By Jordan Bright

As farmers are always on lookout for the most efficient ways to grow and use their soybeans to meet end-user needs while maximizing profit opportunities for their operations, several emerging uses have allowed soy growers to explore new markets in recent years—including biodiesel, soybean meal improvements and high oleic oils. Although there are always obstacles to diving into new markets and being one of the first to give it a go, early pioneers of these markets are sticking by their advocacy and believe in the potential they have for the soybean industry.

Soybean meal improvements



Jared Hagert says soybean meal improvements are vital to the industry for long-term profitability. Photo courtesy of USB

Jared Hagert, of Emerado, N.D., farms with his wife, Brandie, growing soybeans, spring wheat, dry edible beans and corn. The fourth-generation farmer was an early supporter of soybean meal improvements.

As 97 percent of soybean meal is consumed by animal agriculture, including swine, poultry and fish,

Hagert said it is important to him to make sure growers are meeting their number one customers' expectations for quality feed.

"The individuals in the production side of animal ag—they're looking for a reliable supply, but not just bushels—they're also looking for a certain quality," he said.

The vision is to drive innovation beyond the bushel and continuously improve U.S. soybean meal. The United Soybean Board (USB) has looked at meal improvements for a number of years, and just recently started a project to raise protein levels in soybeans in the upper Midwest by a percent or percent-and-a-half. Hagert said he's encouraged to see some of the results coming in and it looks like the goals are achievable.

"This involves working with industry partners to create those types of varieties, not only improving protein, but enhancing the nutritional bundle and really being able to provide what our end users are looking for in the quality of their feed," Hagert said.

He added that improvements in the protein and nutritional bundle must be made without sacrificing yield.

"We as producers have opportunities in the near future to see some of these products come from enhanced breeding methods—it's a different way of solving an end users problem and really looking at how to get those improvements taken care of," Hagert said.

Hagert added soybean meal improvements are vital to keeping U.S. soy competitive in the global marketplace. "Soybean meal improvements are extremely important for long-term profitability," he said. "If we continue to just go after volume and push yield we've got to be mindful of what impact that has upstream or downstream."

Biodiesel



Bob Metz was an early supporter of biodiesel when the industry was searching for a solution for excess vegetable oil in the early 2000s. Photo courtesy of USB

The soybean crushing industry is driven by feed protein for animal agriculture but crushing soybeans also produces oil, and in the early 2000s there was an excess of vegetable oil sitting in the U.S. and no use for it.

Bob Metz, of Peever, S.D., is a fifth generation farmer, who was in on the ground level advocating for the biodiesel market from the beginning, and pushing for a solution for the excess oil.

"When the only use for it was human consumption and we were meeting that demand—then the market would

just go terribly south, there was no other use for it," he said. "So we decided we needed a secondary use—food should always be the primary use, but we decided that biodiesel was that secondary use for soybean oil when the food market was saturated."

Metz, who grows 50 percent corn and 50 percent soybeans, and is a current soy checkoff farmer-leader, served on the National Biodiesel Board (NBB) for 15 years and as president for three years. He was on the NBB and serving as American Soybean Association (ASA) president when the industry joined the Renewable Fuel Standard (RFS).

"It came about in the early days, you were buying biodiesel in 2.5 gallon jugs—it was mainly just an additive as a lubricant for our fuels, but there were many people in the industry who saw a bigger picture and they understood we needed to move from being an additive to one of the major players in the fuel industry," Metz said.

And biodiesel became bigger than anyone ever dreamed it would be, he added.

"Today we still have excess vegetable oil in the U.S.—but when we hit that point, the biodiesel market is strong," Metz said. "What biodiesel does is give us a nice floor in the soybean oil prices—it doesn't necessarily drive soybean oil prices."

Metz said one of the challenges of growing the biodiesel market is working with the petroleum market to increase biodiesel blends.

"We need to continue to invest in this industry to keep it strong," he said. "Biodiesel is a clean burning, renewable fuel and it's helping American agriculture."

High oleic oils



John Motter was one of the first farmers who started growing high oleic soybeans in Ohio in 2011. *Photo courtesy of USB*

John Motter was one of the first 12 farmers to grow high oleic soybeans in Ohio, where the market first got its start.

Motter, USB chair, first became interested in high oleic when he was involved with the Ohio Soybean Council and attended ASA's Soybean Leadership College and saw a presentation on trans fats.

"I learned early on that we had a problem in edible oils," he said. "That was my first exposure to the issue of trans fats in partially hydrogenated soybean oil."

Motter said the number one benefit of high oleic is its stability without needing partial hydrogenation—which is what creates the trans fats that consumers are trying to avoid. The high oleic varieties are also bred to be lower in saturated fat—another consumer health concern.

"It's certainly a benefit to the consumer market when we can have the best of both worlds," he said.

On his operation in Jenera, Ohio, where he farms a corn and soybean rotation, Motter started growing high oleic soybeans in 2011. Today he is 100 percent high oleic.

"We all talk about the 9 billion pounds of high oleic that's needed domestically, which equates to 18 million acres, I think that number is still a very solid number," he said. "I know we were hoping we could achieve that by 2023 and that date has pushed out a couple of years due to regulatory issues."

Motter said regulatory issues have been the number one challenge for growing the high oleic market.

"We in soybeans have always been very responsible in not bringing a trait to market unless we have global approval and global approval has been challenging both in China and Europe. We continue to have to grow in a stewarded program, which means there are limited places that will receive the beans."

But Motter continues to advocate for high oleic because he said the market is absolutely there.

"It's a great oil—we're not the only grower, there's high oleic canola and sunflowers, but we certainly have the potential to be the largest supplier of high oleic just because we have a greater geographic growing area."

Motter said the soy checkoff board has invested in expanding the growing area, so farmers can benefit from high oleic more quickly.

"We have to do a better job as American farmers than our counterparts in South America—so we always have to be innovative, we have to find the next trait, the next farming practice, to keep us more competitive," he said. ■

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.

ASA in Action



Growers Underscore Importance of U.S. Soy Exports to Nation's Economy

The American Soybean Association (ASA) recently submitted comments to the U.S. Trade Representative (USTR) and Department of Commerce on the analysis of the trade deficits in goods with 13 countries.

The U.S. is the world's largest soybean producer and exporter, with more than 60 percent of the soy crop exported globally. Soybean exports globally totaled nearly \$25 billion in the 2015-16 marketing year and made up 17.5 percent of agricultural export sales. Thanks to trade agreements, including the North American Free Trade Agreement (NAFTA), other Free Trade Agreements and agreements under the World Trade Organization (WTO), U.S. soy exports have grown significantly over the past 25 years. These agreements reduced or eliminated tariffs and other market access barriers, and have allowed the U.S. to challenge unfair market restrictions.

ASA's comments outlined how exports are critical to farmers, ranchers, the rural economy and jobs.

"Economic growth in America's heartland is inextricably linked to the long-established productivity and growing success of U.S. food and agriculture, which is an American success story," ASA stated in the comments. "Our sector employs millions of hard working Americans, has improved the nutrition and economic wellbeing of generations of American families, and is one of our nation's most efficient and competitive industries.

America's food and agriculture sector is poised to grow internationally, building upon its well-deserved reputation for high quality products, trusted brands and continual innovation."

However, ASA added, the ability to continue to create jobs and support economic growth in rural America depends on maintaining and increasing access to markets outside the United States through existing and future trade agreements.

"With more than 95 percent of our customers living outside our borders, expanding access to international markets – including in growing regions in the Asia Pacific – is essential for our future success," ASA stated.

ASA also emphasized how trade agreements have greatly benefited U.S. soy growers and U.S. agriculture.

"The U.S. has 20 free trade agreements with countries that account for 10 percent of the global economy. Yet these deals are the basis for nearly one-half of America's exports," ASA stated in the comments. "In the first five years after the U.S. has concluded free trade agreements, U.S. exports have increased three times as rapidly as overall export growth. Over the past five years the U.S. has, with its free trade partners, run a trade surplus for manufactured goods of about \$230 billion. Those agreements have helped open U.S. markets and have contributed to the strong growth in agricultural exports during the last 30 years. Importantly, in calendar year 2014, U.S. agricultural exports to these countries account for 41 percent of total U.S. agricultural exports, according to USDA data."

According to ASA, overall, the U.S., the U.S. agricultural sector, and the U.S. soy industry have greatly benefited from WTO agreements. □



◀ In testimony before the House Agriculture Subcommittee on General Farm Commodities and Risk Management, ASA President and Illinois soybean farmer Ron Moore spoke on the need for robust programs within the risk management framework of the nation's farm legislation. *Photo courtesy of House Agriculture Committee*



Top ag officials conclude their meeting with Environmental Protection Agency Administrator Scott Pruitt's staff, including Samantha Dravis, associate administrator for policy, and Byron Brown, deputy chief of staff to the administrator. American Soybean Association CEO Steve Censky (*second from right*) co-chairs the Production Agriculture CEO Council. *Photo courtesy of CropLife America*



ASA Chairman Richard Wilkins (*right*) talks with Agri-Pulse's Spencer Chase (*left*) at NAFB Washington Watch. The American Soybean Association (ASA) participated in NAFB's annual Washington Watch Issues Forum in May, speaking with members of the ag media about the aggressive legislative agenda ASA is pursuing with the 115th Congress and administration to move the needle for soybean farmers. *Photo credit: Jessica Wharton*



As part of the U.S. soy industry's ongoing work with the International Soy Growers Alliance (ISGA), U.S. farmers went on a mission trip to China and India, addressing topics like biotechnology, food safety and future demand of these two populous, growing countries. (From left to right): U.S. Soybean Export Council (USSEC) CEO Jim Sutter, USSEC Chairman/ASA Director Jim Miller, and USSEC/USB Director Jimmy Sneed host a media teleconference from Delhi, India. *Photo courtesy of USSEC*



(From left to right): Randy Souder, Iowa Soybean Association/Soy Aquaculture Alliance Board director; Robert White, United Soybean Board director/USB representative for the Soy Aquaculture Alliance Board; and Jeff Sollars, American Soybean Association director, share the sustainable story of U.S. soy and the value it brings to aquaculture during the Seafood Expo North America (SENA) in Boston, Mass. *Photo courtesy of the Soy Aquaculture Alliance*

SoyTown Hall

We asked farmers:

“What new use/new market for soybeans, meal or oil are you excited about and why?”

Here’s what they said:

Brad Doyle, Arkansas

“The Natural Soybean and Grain Alliance (NSGA) located in Fayetteville, Ark., has acquired the highest protein soybean commercially available. It is a late maturity group five, non-GMO soybean that can be grown in the Mid-south and Southeastern United States for grain production. They are currently working with a non-GMO crush mill in Missouri and a poultry company in Arkansas to evaluate the value of this product in the feed market. With soybean meal protein near 51.5 percent, there should be some savings to the poultry producer in a feed ration. Grain yields have been similar to most other commercially available non-GMO varieties in the University of Arkansas yield trials.”

Barry McGraw, Ohio

“One area we are excited about is Soy Methyl Ester (SME) emulsion for roofing application (shingle sealer). We are working directly with a commercial company (RoofRevivers) to commercialize and transfer our technology. Traditionally, there has been only one solution to persistent roof problems—complete roof replacement. Each year, over 11 million tons of asphalt shingle scrap from roof tear-offs are produced in the United States, and these shingles—comprised of non-biodegradable materials such as tar, plastics and rubbers—are piling up in landfills. This SME sealer offers an innovative alternative to roof replacement. This material will be spray applied to asphalt shingle roofs. The sealer re-saturates dried out, curled and leaky roofing shingles, restoring pliability and flexibility.”



@MNSoybean

“High oleic soybeans being grown in Minnesota for the first time this year!”



Ashley Babl, Nebraska

“I think the use of soy in aquaculture is really interesting! Never gave any thought while harvesting our soybeans that they could possibly go into the diets of aquatic animals.”

Kevin Scott, South Dakota

“One of the new things I am excited about is the production of concentrated protein meals for the aquaculture industry. These very high protein soybean meals can be fed as a replacement for much of the traditional fish meal that has been used for farmed fish and can be manipulated for feeding certain species for their specific needs. I think the use potential for soybeans is very big, as fish farming is a strong and growing industry. There are plans for a new commercial size plant to be built in South Dakota for this product and that is good news for the soybean industry.”

Charles Atkinson, Kansas

“A new and exciting market for American soybeans is aquaculture. This new market has the potential to provide more food in an ever-growing population. There is a potential to create new jobs in the U.S. and abroad and American soybeans can play an important role in this expanding market. With quick access to consumption points and availability of quality products, I think we have a great opportunity to provide the feed stock for the aquaculture industry.”



@Mo_Soy

“High oleic is a great opportunity for #soy in the food market, and for added value to #farmers.” ▣

Have a question for ASA's Soy Town Hall?
Send it to jbright@soy.org, and it could be in an upcoming issue of this magazine.

Policy At-a-Glance

What is ASA Asking for on the Hill?



2018 Farm Bill

- Strengthen the farm safety net
- Prevent reduction of premium subsidies under the crop insurance program
- Reauthorize Agriculture Risk Coverage and Price Loss Coverage
- Give producers more options regarding their crop acreage bases



Environmental Regulations

- Abolish the Waters of the U.S. proposed rule
- Improve pollinator habitat
- Prevent a ban on neonicotinoid crop protection products



Biodiesel Demand

- Extend the biodiesel tax incentive and shift it from a blender to a production credit
- Seek optimal annual Renewable Fuel Standard volumes for biomass-based diesel



Trade Expansion

- Ensure continued positive trade with China and NAFTA partners
- Enhance trade relations with Asia-Pacific countries
- Remove barriers to trade with Cuba
- Improve the timeliness of new biotech trait approvals by China and the European Union



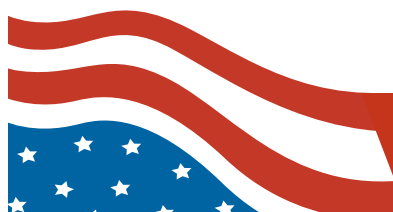
Biotech and Food Regulations

- Exclude products derived through new plant breeding techniques from being labeled as biotech and requiring pre-market approval
- Develop and implement regulatory reform that enhances timeliness of biotech trait approvals



Transportation and Infrastructure

- Ensure agriculture industry priorities, like upgrades to locks and dams, are included in any large-scale infrastructure funding
- Increase funding in annual Energy & Water Appropriations Bill for inland waterways, ports and harbor maintenance programs



Visit SoyGrowers.com to learn more about these and other issues that ASA is working on.

AQUACULTURE:

On the Verge of a Boom



Photo credit: Charlie Godbold of Godbold Foto

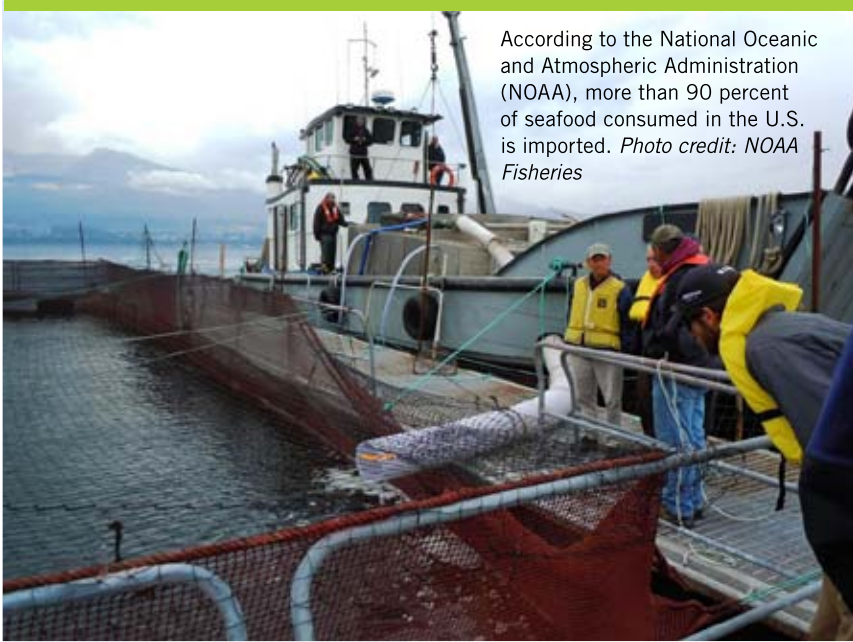
| By **Maria Finn**

The role of animal agriculture in the soybean economy is not a small one, and it's safe to say that there are few soybean farmers in the United States—if any—who don't intimately understand the supply chain that carries their soybeans to crushing facilities and then in the form of soybean meal to pork, poultry, dairy and other livestock operations around the world. That demand,

which constituted 28.2 million tons of soybean meal in the 2014-15 marketing year according to the United Soybean Board (USB), is only poised to grow, as demand for meat protein increases both domestically and internationally.

It is within that livestock sector, however, that a small but growing segment presents some of the most significant growth potential. Not in

the hog finishing operations in Iowa, or in the poultry houses in Delaware, but in tanks and lagoons and offshore pens where finfish consume an increasing quantity of soybean meal-based feed. While aquaculture is still a fledgling market in the United States, it has comprised a critical end use for American soy throughout Latin America and Southeast Asia for years.



According to the National Oceanic and Atmospheric Administration (NOAA), more than 90 percent of seafood consumed in the U.S. is imported. *Photo credit: NOAA Fisheries*

According to the National Oceanic and Atmospheric Administration (NOAA), more than 90 percent of seafood consumed in the U.S. is imported.

As groups like USSEC work to capture the booming aquaculture segment overseas, the American Soybean Association (ASA), the Soy Aquaculture Alliance, the Coalition for U.S. Seafood Production and others work to foster a domestic aquaculture industry in an effort to chip away at a seemingly insurmountable seafood trade deficit. Michael Rubino, director of NOAA Fisheries Office of Aquaculture believes that much can be gained by increasing aquaculture opportunities in the United States.

“By importing so much of our seafood, we are also missing out on the benefits of local production and on domestic job creation; especially in rural communities such as coastal fishing towns and agricultural regions that produce aquaculture feed ingredients like fish processing trimmings, grains and algae,” Rubino said.

The young Trump Administration has also taken notice of aquaculture’s potential. During the Senate confirmation hearing of Commerce Secretary Wilbur Ross in January, the nominee unexpectedly addressed commercial fishing.

“Given the enormity of our coastlines, given the enormity of our freshwater, I would like to try to figure out how we can become much more self-sufficient in fishing and perhaps even a net exporter of fishing,” Ross said.

According to FAO, 41 million tons of fish and shrimp per year will be needed to maintain current levels of seafood consumption, a growth that represents serious demand potential for U.S. soybean meal. FAO contends that the added production to meet current consumption levels could result in demand for an additional 13.5 million metric tons of meal, assuming optimal utilization levels. “Today, around 18.5 million metric tons [of soybean meal] are estimated to go into global aquafeeds, almost 6 million metric tons of which come from U.S. farmers,” said Colby Sutter, marketing director for the U.S. Soybean Export Council (USSEC).

Sutter added that USSEC data show the biggest growth areas for aquaculture production to be markets throughout Latin and Central America, Southeast Asia, and even the Middle East and Sub-Saharan Africa. Though that fish is likely to show back up in grocery stores in the U.S., given the staggering trade deficit here at home when it comes to the seafood Americans consume.

Growing demand

The World Bank, Food and Agriculture Organization of the United Nations (FAO) and the International Food Policy Research Institute (IFPRI) estimate that by 2030, two-thirds of all seafood consumed globally will come from aquaculture. The vast majority will be grown and consumed in markets throughout Asia, with tilapia, carp and catfish seeing the fastest growth.

(continued on page 14)

Red tape

The most significant barrier to the foundation of the domestic industry is the permitting process. Currently for new offshore finfish operations, permits are required from three separate federal agencies as part of the laws they administer: the U.S. Army Corps of Engineers by authority of the Rivers and Harbors Act; the National Oceanic and Atmospheric Administration, which administers the Magnuson Stevens Fishery Conservation and Management Act; and the Environmental Protection Agency, which oversees areas under the jurisdiction of the Clean Water Act. In addition to the permitting process, new operations must undergo a series of consultations and reviews to evaluate how their work may impact the resources, properties and fish and wildlife species protected by the Endangered Species Act; the Essential Fish Habitat provision of the Magnuson Stevens Act; the National Historic Preservation Act; the Fish and Wildlife Coordination Act; and the National Marine Sanctuary Resources Act. And states may require even more.

"It's a long to-do list," said Bev Paul, ASA's Washington representative focused on aquaculture issues. "And for many looking to get into the industry, working through so many hoops when the domestic demand is still in its early stages is a very serious roadblock."

In early 2016, the Obama Administration sought to increase interest and investment in Gulf aquaculture with approval of the Gulf Fisheries Management Plan, which was a component of the administration's larger National



The most significant barrier to the foundation of the domestic aquaculture industry is the permitting process, which requires new offshore finfish operations to obtain permits from three separate federal agencies. *Photo Credit: NOAA Fisheries*

Ocean Policy. As part of the plan, NOAA opened the permitting process to offshore fish farms in federal waters in the Gulf of Mexico, where popular culinary finfish like red drum, cobia, and almaco jack present an enticing prospective catch. But as expected, a legal challenge was immediately filed by aquaculture opponents. As a result, no permit applications have been submitted and undoubtedly won't be until the lawsuit is resolved.

In addition to the Gulf, NOAA is also in the process of evaluating a similar program in the Pacific Islands Region. According to a NOAA report, the program is currently a preliminary proposed federal action, which means that the agency is at this stage evaluating the potential for sustainable aquaculture and assessing economic and environmental impact.

Local expertise

Because the industry is still in its early stages, many would-be fish farmers find themselves searching for a simple place to answer questions

either on granular details or even on more general aspects of aquaculture. Enter the Sea Grant program. Sea Grant is a federally-funded series of state-based programs available to the coastal United States as well as states bordering the Great Lakes. The goal of the Sea Grant program is to provide problem-solving facilitation on issues like sea level rise, sustainable fishing, and aquaculture development.

"The grants help young scientists work with communities up and down the coasts on policy and management," said Jim Eckman, who runs the Sea Grant's California program based at the Scripps Institute at the University of California, San Diego. Eckman explained that in his state, while much of the offshore aquaculture development is in bi-valves like oysters and clams that don't require feed, his program also works on inland fish farm developments. "Sturgeon are wild in the ocean and rivers here," he said. "But they're also farmed inland, so we've had teams that have worked on this."

Budget challenges threaten the academic and resource development of the field, however, and proposed cuts to NOAA may halt progress in domestic aquaculture. In the most recent budget, the White House proposed cutting aquaculture research and development by the National Marine Fisheries Service by \$3 million—or one-third—as well as entirely eliminating the Sea Grant program. Paul said that ASA is on record as supporting the Sea Grant program, which also serves as the knowledge base for aquaculture issues in the majority of congressional offices in Washington.

“Unless your staffer happens to be from a coastal fishing community, aquaculture is uncharted territory for so many offices on Capitol Hill,” Paul said. “Sea Grant has a disproportionately successful impact for those coastal and Great Lakes states in terms of the resource it provides.”

Do fish like soy?

But growing the domestic industry with expertise and investment and resources doesn't benefit soybean farmers if the fish raised won't eat soybeans. So that begs the question, do fish like cobia, salmon, trout, sea bass and red drum—all naturally carnivorous—actually like soybeans? The answer lies in the soybean as a source of both proteins and omega-3 fatty acids. Successfully switching diets is a matter of finding the right nutrients, not simply replacing one protein source with another. Many studies have been done, including by USSEC, USDA and others, to see

if alternative sources of protein and omega-3s can be used to feed carnivorous fish. USDA specifically has researched alternative fish feed rations for the past decade, including insects, trim from processed fish and algae. Most promising for soybeans is a study from the Global Aquaculture Alliance that showed that carnivorous fish like cobia performed as well on high soy diets as they did on a diet of 64 percent fishmeal. Those within the industry consider a soy-based—or vegetarian—feed to be more sustainable, and more cost effective, and trials are ongoing to see if other carnivorous fish can thrive similarly to cobia on a vegetarian diet.

Riding the foodie wave

If there is an issue with getting the aquaculture movement off the ground on the production side, that difficulty is not mirrored at the opposite end of the spectrum. Both retailers and chefs are looking to capture the momentum of the food transparency movement in which consumers seek additional information on their food. As a result, chefs are integrating domestically-produced fish into their menus and product offerings at an increasing rate.

“The key to aquaculture's success as a source of significant demand for soybean meal lies in scale, and that means offshore finfish operations,” Paul said. “But the key to domestic aquaculture in general is positive consumer perception, and that means cutting-edge chefs and food tastemakers.”

And companies are taking notice. LoveTheWild was founded in 2014 by two Boulder, Colo.-based entrepreneurs, Jacqueline Claudia and Christy Brouker. They sold both wild and farmed sustainable seafood in dinner size frozen portions with gourmet sauces, including barramundi in mango, sriracha chutney and catfish with Cajun crème among others. The artisanal company was big on values and short on capital—a conundrum for food startups hoping to scale. Then Dutch-based Aqua-Spark signed on with a \$2.5 million series-A investment, but with the caveat that LoveTheWild shift to all sustainably farmed fish and drop the wild fish and only use farmed. At that point, actor Leonardo DiCaprio signed on as an investor and advisor to the company, which gave both the company and the larger aquaculture movement some glamour.

Amy Novogratz, managing director of Aqua-Spark, believes that we are in just the beginning of a worldwide shift to more farmed fish. “To meet global protein needs, we may have to triple aquaculture production this century,” she said. “As well, we urgently need to reduce aquaculture's footprint as the sector grows. We invested in LoveTheWild for many reasons—at the top of the list is their potential to educate consumers and raise the bar for more sustainable aquaculture.”

Passmore Ranch, near Sacramento, is an inland operation that raises sturgeon. Owner Michael Passmore grew up in North Texas, his grandfather a cattleman. He left

“To meet global protein needs, we may have to triple aquaculture production this century.”

— Amy Novogratz, managing director of Aqua-Spark

(continued on page 16)



The most significant barrier to the foundation of the domestic aquaculture industry is the permitting process, which requires new offshore finfish operations to obtain permits from three separate federal agencies. *Photo Credit: NOAA Fisheries*

that life—or so he thought—when he joined the Marines. He then repaired cars and boats, until he landed a job in Dallas doing background checks. In 1991, this field took him to a similar job in Elk Grove, Calif., near Sacramento. The nearby community of Sloughouse, with its big sky and open grasslands reminded him of North Texas, and so he bought 40 acres, without much of a plan for them. About the time he was getting ready to enroll in law school, he met his neighbor Ken Beer, a freshwater fish farmer who showed him the ropes. “My grandfather told me to look around and see what the fella who was doing well did, and then do that,” Passmore said. “I am lucky to have a terrific mentor in my neighbor Ken Beer, founder of The Fishery. Also, I like water and don’t mind hard work. It was a natural fit for me.”

The original plan was that Passmore

would be a lawyer and gentleman fish farmer. But instead of one fish pond, he installed seven ponds and an array of tanks, and stocked them with white sturgeon, catfish, bass and carp. He sold the fish at farmer’s markets, but was barely breaking even, until he met Chef Randall Seland, one of the forefathers of the Farm-to-Fork movement in Sacramento. Through Chef Seland, he began meeting chefs in Sacramento, then in Napa, and finally, his fish became popular in San Francisco and then to Chef Rick Moonen in Las Vegas. Now, Passmore Ranch delivers both the fish they raise, as well as the fish other farmers raise, too. He’s expanded to serving salmon, steelhead, rainbow trout, catfish, sturgeon and even makes caviar now as well. In order to maximize their constantly irrigated levies, Passmore Ranch raises lamb and goat, as well as specialty

vegetables. And, Passmore uses soybeans along with a percentage of fishmeal in his feed rations. “For my fish, it remains to be seen if we will deploy a completely vegetarian feed or not,” he said. “I am open to it, but I like to take small steps in dietary changes.”

While the long-term growth of the aquaculture sector in the U.S. and abroad will consist of small steps like Passmore’s, streamlining the permitting process is the key to finally bringing commercial-scale projects to the U.S. Like the larger offshore finfish operations in the Gulf and Pacific Islands, and existing markets like the ones in Latin America and Southeast Asia, it can be said for certain that even today, the market for U.S. soybean meal is expanding far beyond pigs and chickens. ▣

Issue Update

Advocating Policies to Build Markets for Biobased Products

| By Karen Coble Edwards

Government policies can stimulate demand for soy in a wide array of products ranging from carpet and artificial grass to asphalt roads and renewable chemicals. The American Soybean Association (ASA) advocates for these new market opportunities and is a leader in the Biobased Products Coalition (BPC), which advances policies to support the production, marketing and sale of biobased products. The BPC consists of large and small companies that produce, process or utilize biobased products, and agricultural trade associations that represent biobased feedstock producers.

Over the years, the BPC and ASA have led efforts that resulted in increases in mandatory funding for the Biobased Market Program in the 2008 and 2014 Farm Bills, and accelerated implementation and expansion of the federal BioPreferred procurement and biobased labeling programs. The Energy Title of the Farm Bill has been a primary vehicle for advancing biobased interests through authorization and funding of the Biobased Market Program and the Biorefinery, Renewable Chemical and Biobased Product Manufacturing Assistance Program.

During a Senate Agriculture hearing held in Michigan on May 6, ASA highlighted the importance and benefits of the Farm Bill Energy Title programs in supporting the emerging bioeconomy and agriculture's role and opportunities in these markets. Michigan Soybean Association President Dave Williams testified on behalf of ASA.

"The Biobased Market Program,



Universal Textile Technologies is putting soy in the backing of carpet and artificial grass offered by companies like Signature Carpet and SYNLawm, resulting in thousands of feet of soy-backed carpet and turf used across the nation. *Photo Credit: SYNLawm*

established and expanded in previous Farm Bills, encompasses the federal biobased procurement program and biobased products labeling program," Williams said. "This is an effective and important program that uses the federal government's purchasing power to pull products into the market and encourages investment and development of biobased products."

ASA will continue to advocate for continuation and expansion of these programs as development of the next Farm Bill begins to take shape.

The U.S. government reports it spends \$445 billion in goods and services, and it operates 360,000 buildings and 650,000 fleet vehicles. Therefore,

the federal government can use its purchasing power to lead the nation in the transition to soy-based products. Soybean growers are major players in these product markets thanks to the various performance, health and environmental benefits that soybean and soybean components can provide to companies and consumers.

A U.S. Department of Agriculture (USDA) economic impact analysis updated in 2016 showed that the U.S. biobased products sector supported 4.2 million jobs, \$127 billion in direct sales, and provided \$393 billion in total value to the U.S. economy.

The Energy Title's biobased provisions are also important to state policy. The state of Michigan enacted procurement preference legislation in 2016 that is modeled on the federal Biobased Market Program administered by USDA. To date, USDA has identified 97 categories of biobased products, ranging from engine oils to carpet to cleaning supplies, and these products are referenced to receive state procurement preference under Michigan's legislation.

Under the Biobased Market Program, USDA is also designating biobased intermediate ingredients and feedstocks. States are adopting policy to support private-sector investments in this growing renewable chemicals market. In 2016, the state of Iowa passed a renewable chemicals tax credit that makes \$10 million available in tax credits annually beginning in 2017. A similar bill is now pending in the Illinois State Senate. ▀

When Robert Shaffer checks on the soybeans he planted the week before, they are already poking through in his no tilled field in El Paso, Ill.
Photo courtesy of Robert Shaffer



Soy SHOTS

Submit Your Soy Shots at:

membership@soy.org

Erin Wright prepares soybean seeds for another day of planting on her farm in Emden, Mo., where she works with her husband Matt.
Photo courtesy of the Missouri Soybean Association



Even in the gloomy, wet weather on Cory Atkins' Seaford, Del. farm, soybeans are emerging through cover crops in May 2017.
Photo courtesy of Cory Atkins



Mike Cunningham shares a shot from the cab as he plants soybeans in Bismarck, Ill.
Photo courtesy of Mike Cunningham



A DuPont Pioneer Plenish impact plot is planted on Scott Metzger's farm in Williamsport, Ohio.
Photo courtesy of Scott Metzger



Industry

Perspective

Domestic Aquaculture Catches On

By **Jessica Wharton**

Don Kent, president of Hubbs-SeaWorld Research Institute and CEO of Rose Canyon Fisheries, wants domestic, sustainable seafood to be readily available for everyone, and at a more affordable price.

Rose Canyon fisheries, set off the coast of California, is a collaboration between Hubbs-SeaWorld Research Institute and Cuna Del Mar, created to pioneer the first sustainable, offshore aquaculture finfish farm in U.S. federal waters.

"This program meets all the needs people have been talking about for over a decade," Kent said. "We have a depressed fishing industry and need a new paradigm for revenue generations so instead of catching more fish we've developed a way to grow these fish locally and sustainably."

To Kent, sustainability means being environmentally conscious, utilizing the best technology available, producing in a way that is socially acceptable and understood, and finally, being profitable. He believes Rose Canyon Fishers does just that.

"Rose Canyon Fisheries will operate in open water away from the shore where there is ample room, water quality won't be affected and fish health can be maintained," he said. "But most importantly, it's in close proximity to markets so we won't have to waste energy harvesting fish which will in turn keep the price down for consumers."

Producing fish at affordable prices for consumers is a key goal for Kent and Rose Canyon Fisheries.

The U.S. imports 91 percent of seafood consumed in the U.S., and ultimately consumers pay for import costs. Kent said he believes that "fish and seafood are healthy options that everyone should have access to."

In addition to providing healthy options at a pocket friendly price, Kent pointed out that the creation of Rose Canyon Fisheries would provide U.S. jobs both "upstream and downstream."

Downstream jobs include soy growers across the country, which the Soy Aquaculture Alliance has been quick to highlight. According to their website, the U.S. soybean industry has been at the forefront of developing new aquaculture feed sources to meet growing demand and continues to be the fastest growing use for soybeans.

U.S. soybean meal provides a high-quality, economical and renewable source of protein for fish feed.

This vertical integration is only one of the many benefits of Rose Canyon Fisheries, Kent said. Others include combating the U.S. seafood deficit and reducing the carbon footprint that results from importing seafood from thousands of miles away.

While most of what Rose Canyon Fisheries is proposing is common practice in other countries like



Rose Canyon
F I S H E R I E S

Greece and Japan, the U.S. permitting and regulation process has kept the project at bay.

"There is no defined process to setting up a fishery in U.S. waters, which has made the process quite challenging," Kent said. "We are happy to now be working with the National Oceanic and Atmospheric Administration."

In addition to the National Oceanic and Atmospheric Administration, others that will play a role in the permitting process are the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, California Department of Fish & Wildlife, California Coastal Commission and U.S. Coast Guard.

Once opened, Rose Canyon Fisheries will be able to produce 11 million pounds of fish annually with common species found in California waters, including Yellowtail Jack, White Seabass and Striped Seabass.

As seafood demand in the U.S. continues to increase, Rose Canyon Fisheries is hoping to meet that demand with affordable fish that has been raised in sustainable and socially acceptable ways. ■

SoyWORLD

Trade Plus International Development is Right Formula for U.S. Soybean Growers

By **Daryl Cates**, WISHH Chairman

Increasing trade is a hot topic on farms across America, as well as offices in Washington, D.C. and countries throughout the world. We U.S. soybean growers need to constantly look for long-term market opportunities, which is why I commit my time to the American Soybean Association's (ASA) World Initiative for Soy in Human Health (WISHH) program. The right formula builds trade opportunities for U.S. soy in growing markets—and at the same time—improves lives for people abroad.



U.S. Department of Agriculture funding of WISHH's FEEDing Pakistan project introduced U.S. soy-based aquaculture feeds, and as a result, Pakistani farmers' had their fish grow to nearly double the weight of traditional Pakistani harvests. *Photo courtesy of WISHH*

Trade combined with WISHH's international agricultural and economic development work made it possible for Pakistani men and women, like a woman we know as Sehar, to feed U.S. soy-based aquaculture feeds to their tilapia and rohu, and as a result, see their fish grow to nearly double the weight of traditional Pakistani harvests.

Trade and international development are tools for Samuel Kwame Ntim Adu to work with WISHH to expand

his widely recognized West African company. He is growing the company's line of food products and will start manufacturing livestock feeds made with U.S. soy in Ghana.

Trade plus international development allows entire classrooms of El Salvadoran and Guatemalan children to eat more nutritious foods that help them grow, learn and lead productive lives. U.S. soybean farmers' support of WISHH made it possible for WISHH to work with a major Central American food company that markets U.S. soy-based foods that are popular in schools, supermarkets and more.

Sehar, Samuel and these school children are the real world faces of how trade and international development improve lives. Trade requires at least two people. More often, 2,000 or even 20,000 people are needed in the workforce of the value chains required to grow, manufacture and market more nutritious foods and feeds. What better way to create jobs and economic growth than through sustainable farming and businesses that offer nutritious human foods and livestock feeds?

In many countries, local supply cannot meet the market needs. Consequently, trade is critical to reliable and safe supplies of affordable, high-quality nutritious foods and feeds. The U.S. Department of Agriculture's (USDA) outlook released in February forecasts 2017 U.S. agricultural exports at \$136 billion. Strong global demand for



Daryl Cates is chairman of the ASA's World Initiative for Soy in Human Health (WISHH) Program Committee and an Illinois soybean grower. Cates is one of 15 soybean growers from 11 states who serve on WISHH's current leadership team. *Photo courtesy of WISHH*

oilseed crops, such as soybeans, is expected to generate sales of \$31.6 billion. The volumes and monetary value of oilseed trade continue to grow as consumers with rising incomes are able to diversify diets, including quality proteins, and enhance nutrition. USDA Foreign Agricultural Service programs have played an important role in partnering with U.S. farmers for trade and development.

Increased trade and development with U.S. soy results in improved global nutrition, greater economic growth here and abroad, and decreased risks of political instability. Through WISHH and its role as a trailblazer for trade, U.S. soybean farmers are teaming up and helping train developing country food and feed entrepreneurs who are eager to meet the world's growing demand for affordable, available, nutritious and delicious foods. ■

Sustainability

Sustainability Practices Prove Their Worth

By **Jessica Wharton**



Dave Walton, a grower from Wilton, Iowa, uses social media to give the world a glimpse of sustainable farming practices on his operation.
Photo courtesy of Dave Walton

For a few minutes on Monday afternoons, you can be transported to Walton Farms in Wilton, Iowa—if you're friends with Dave Walton on Facebook.

His Monday afternoon ride-along videos have rapidly gained popularity as he shows city dwellers a typical day on the farm—from planting and harvesting, to caring for ewes and other livestock and most importantly, how sustainability fits into every moving part.

"Sustainability means something different for everyone," Walton said. "But the way we define it on our farm, is farming to leave the land better than we found it for future generations."

Walton Farms has been operating on and around the same land in Iowa since 1835, spanning multiple generations and many different farming practices.

"We understand that the past generations did the best they could to take care of the land, and as we move forward we want to take

that same mindset, utilize new information and implement updated ways of farming to be the best stewards of the land as possible for generations to come," Walton said.

To update these practices and find success, Walton said it's crucial to make sure all farm partners are on board and understand sustainability goals—from seed suppliers to hired hands.

When Walton Farms acquired new land 20 miles away from their other farming areas, implementing new sustainability practices seemed a natural fit. With all farm partners on board, Walton said once they got started, they never looked back—leading them to be 85-90 percent no-till today.

In addition to no-till farming, Walton Farms has converted highly erodible acres into hay production acres and utilizes its livestock operation to graze cover crops in the fall and spring, extending the grazing period by two full months.

While implementing new sustainability practices can be challenging, Walton said the outcomes and benefits have proven worthwhile.

"Not only has implementing sustainable practices led to lowering our cost of production, but it has also shown a huge benefit to our soil structure and soil health," he said.

The lower cost of production is in part due to more effective use of fertilizer that is in turn maximizing yields, and with higher water filtration

rates, Walton said it's easy to spot his fields after a rainstorm, as there is significantly less standing water.

Seeing the benefits on his farm, Walton has taken to social media to encourage other farmers to experiment with sustainable farming practices, in addition to educating the non-farming public.

In the land of hashtags, Walton said he likes to utilize non-agriculture related tags to increase his viewer base and reach people who might otherwise not know what happens on a farm.

"About 99 percent of feedback is positive [on social media] and most non-farmers learn something new and come away with what I hope is a more positive impression of agriculture," he said.

With more than a thousand Twitter followers and Monday Ride-Along videos nearing 400 views each, Walton is sharing the message of farming for the future far and wide. ■



Soybeans grow through the corn residue in a no-till field on Walton Farms in Wilton, Iowa.
Photo courtesy of Dave Walton

SoyForward

Minnesota Moves to Higher Biodiesel Blend to Reduce Air Pollution

By **Jon Hunter**

Minnesota is poised to do something remarkable next year that will help protect the health of more than five million Minnesotans. On May 1, 2018, virtually all of the diesel fuel sold in the state will contain a 20 percent blend of biodiesel. This cleaner-burning fuel, known as B20, will reduce tailpipe emissions from diesel vehicles and reduce the state's dependence on imported petroleum.

The American Lung Association in Minnesota recognizes the role biodiesel plays in preventing air pollution and reducing greenhouse gas emissions in Minnesota, and has worked closely with soybean growers and other partners to promote the fuel and to support the state's first-in-the-nation biodiesel standard.

Vehicle emissions are the single largest source of air pollution in Minnesota. While newer diesel engines are much less polluting than those in older vehicles, many thousands of diesel vehicles with limited pollution controls are still in use in Minnesota. Using biodiesel reduces emissions of smog-forming pollutants and tiny particulates that can travel deep into our airways, harming our lung- and heart-health. That is why the American Lung Association in Minnesota promotes biodiesel as a Clean Air Choice® that can benefit everyone in the state, regardless of which vehicles or fuels they use.

In the first 10 years of Minnesota's biodiesel use, which began at 2 percent and has incrementally ramped up to 10 percent in warmer months, carbon dioxide emissions have also been reduced by an estimated 7.4 billion pounds. That is the same positive impact on emissions as taking 706,649 vehicles off the road, or not burning 17,998 railcars of coal.

To help ensure the successful use of growing levels of biodiesel, our organization has hosted free workshops across the state to explain biodiesel to diesel users; coordinates a biodiesel essay scholarship for high school seniors; serves on the state's Biodiesel Task Force; and promotes the fuel in numerous meetings, expos and exhibits.

Along the way, Minnesota has learned important lessons that prepared us well for successfully achieving next year's move to B20. We know the importance of using high quality biodiesel that meets ASTM* specifications. Our minimum standard returns to B5 during cooler months to match the cold properties of #2 diesel. And we have celebrated the early adopters, like our state's largest transit and municipal fleets, who voluntarily adopted B20 many years ago.

Each year, diesel vehicles in Minnesota consume almost a billion gallons of fuel. By requiring B20 during the warm-weather months and B5 in cooler months, we will significantly reduce our petroleum consumption, displacing it with a cleaner, renewable, locally-produced product made largely from excess soy oil.

Minnesotans are justifiably proud of our clean, healthy air. Thanks to biodiesel, future generations can breathe easier as well. ■

**ASTM is an international standards and testing organization that develops and publishes technical standards for a wide variety of materials, products, systems and services.*



Jon Hunter is director of the American Lung Association in Minnesota.

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- Improve your leadership skills and help advance the soybean industry
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- Connect with soybean farmers from other states and Canada

The ASA DuPont Young Leader Program is a two-phase educational program for actively farming couples or individuals 21 years or older.

The two-phase training program is as follows:

Phase I – Tuesday, November 28 – Thursday, November 30, 2017 in Johnston, Iowa

Phase II – Sunday, February 25, 2018 – Wednesday, February 28, 2018 in Anaheim, California in conjunction with Commodity Classic

For more information about the ASA DuPont Young Leader Program and to apply for the class of 2018 go to: soygrowers.com/learn/young-leader-program

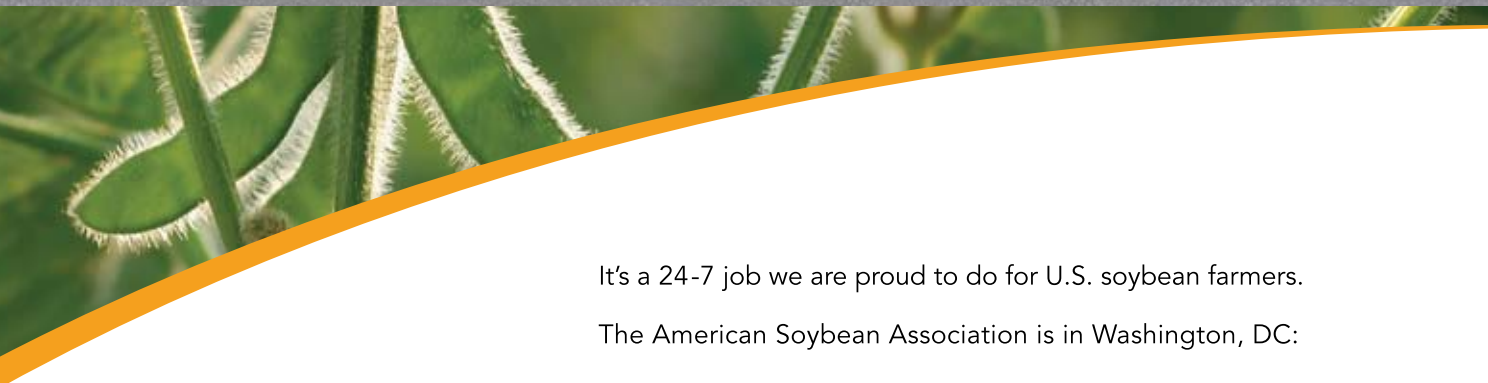
“This is an industry where very few people shoulder the responsibility of feeding so many, with that being said, we all have a responsibility to engage in the ways in which our time & talents allow. The ASA DYL program has helped me on my journey of finding my role within agriculture as an advocate.”

– Monica McCollough, Missouri





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