

Idaho Barley

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Idaho Barley Commission
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R E P O R T

Idaho solidifies top barley producer spot with malting and brewing industry investments



- Has been buying barley in southern Idaho for 50 years (**1968-2018**). They built their original Idaho Falls malt plant in **1990 and expanded in 2004**. AB continues to be the largest buyer of Idaho barley.
- A merger of the world's second and third largest brewers in July 2008 created the world's largest brewing conglomerate – **Anheuser Busch InBev** – with more than \$36 billion in annual revenues, based in Leuven, Belgium.
- St. Louis remains the North American headquarters of ABI and home of flagship Budweiser and Bud Light beer brands.
- Anheuser Busch currently operates 12 breweries and 3 malt plants in the U.S., including their two malt plants in Idaho Falls, with **combined capacity of about 28 million bu malt**.
- ABI purchased Grupo Modelo in **2013**, acquiring more than half ownership of the InteGrow malt plant in Idaho Falls, ID. They assumed 100% ownership of this malt plant in **April 2017**.
- In **October 2016**, ABI purchased the world's 2nd largest brewer SABMiller. In the process, the Miller unit had to be divested and sold to Molson Coors in Canada.



- Idaho Falls malt plant was built in **2005** by Grupo Modelo, Mexico City, and was operated as GModelo Agriculture Inc.
- In **2010** they entered into a joint venture operation with Cargill Malt, Minneapolis, and changed name to InteGrow.

- In **2013** Anheuser Busch InBev bought Grupo Modelo and in **April 2017** they bought out Cargill Malt's share of InteGrow.



- Coors started contracting in Southcentral Idaho in **1969**. They built their current Burley barley elevator in **1971-72** with original capacity of 3.0 million bu. They added 3.0 million bu capacity in **1979** and again in **1991**. **Total Burley elevator capacity in 2018 is 9 million bu.**
- A joint venture of Miller Brewing Co. and Coors Brewing Co. in the domestic US market was finalized in **2008**, combining beer production of the 2nd and 3rd largest US brewers (combined 26% market share).
- Molson Coors acquired full ownership of MillerCoors and the Miller Family brands in the fall of **2016**.
- MillerCoors operates six barley storage facilities, including one in Burley, ID; one malting facility in Golden, CO; and eight breweries stretching from California to Georgia.



GREAT WESTERN MALT
THE HEART OF YOUR CRAFT

- Pocatello malt plant was built in **1981 and expanded in 2017**.
- Great Western Malting Co. has been a leading buyer of Idaho malting barley for nearly 50 years and can trace its history back to **1934** when its original malt plant in Vancouver, WA was established by Northwest brewers to ensure that they had a local high quality supply of malt ingredients.
- GWM was a unit of United Malt Holdings (UMH) when it was sold to GrainCorp of Australia in **2009**,

the second largest agribusiness listed on the Australian Stock Exchange.

- GrainCorp is headquartered in Sydney, Australia and operates more than 280 grain receiving and storage facilities in Queensland, New South Wales and Victoria and provides bulk commodity export and import services at 9 port terminals along the Australian east coast.
- GrainCorp invested in a major expansion of GWM's Pocatello malt plant, increasing capacity by 130% in **2017**. **Pocatello plant capacity is 13.6 million bu. Total U.S. capacity is 22 million bu malt.**

We interviewed key leaders from the Idaho malting and brewing industry on their views of future malting barley demand and Idaho barley competitiveness.

Q.1. There have been cuts in U.S. malting barley contracts in recent years. What are the main factors driving these trends and can growers expect a turn-around in the next few years? What is the long-term outlook for Idaho barley competitiveness?

Jess Newman, Anheuser Busch InBev...

The industry challenges in 2017 can be traced back to the sprout event in 2014. Large contracts with higher-than-expected acceptance rates in 2015 plus high acceptance rates in 2016 resulted in a long position. Maltsters reduced contracts in 2017, and delayed deliveries as they worked through the barley they already have.

In 2018, the industry is correcting the long position and moving back toward typical delivery dates. However, more efficient malt houses, new varieties, and other continuous improvement programs put steady pressure on barley needs.

Wade Malchow, MillerCoors...

Several factors have driven recent production cuts, but largely, it is due to the last three crops having been very good in all regions. We have seen improved barley performance related to crop quality, better than expected yields with few losses, and modest declines

continued on next page

IDAHO SOLIDIFIED TOP BARLEY PRODUCER SPOT WITH MALTING AND BREWING INDUSTRY INVESTMENTS *continued from front page*

in usage related to sales, which have all impacted our recent production levels. MC is working very hard to get to growth and we are working on several initiatives that may impact production levels.

Michael O'Toole, Great Western Malting...

GWM has made a significant investment in our expansion in our Pocatello malt processing plant in the past couple years. The main factors driving our expansion when other commercial malt plants are shutting down include continued access to long term consistent barley from our farmers, an extension of the existing facility (leveraging a very good relationship with the local community and employees), and the desire to improve processing capability and efficiency.

Q. 2. Idaho malt companies have been on the forefront of evaluating and employing new technologies that can improve barley production and achieve both production and economic sustainability. What production practices and technologies are on the horizon that Idaho growers should be investigating?

Jess Newman, ABI...

There are a number of production technologies that have the potential to propel barley production and competitiveness forward. We are excited about the potential of variable rate seeding, fertilizing, and irrigation. We believe this technology can bring efficiency to the entire rotation. We are eager to partner with our growers, who are currently testing this technology to prove the business case.

We're also focused on soil testing, which we see as the next frontier for barley, and essential in determining appropriate fertilizer rates. Along with soil, we will continue to prioritize water efficiency gains, which will help protect agriculture's license to operate in Idaho. If variable rate irrigation is not cost effective, irrigation schedulers and moisture sensors can still make a big difference.

Finally, our internal Barley Research team in Ft. Collins, CO is diligently working to breed new varieties that

will yield more with fewer inputs. We are excited about drought tolerance and other traits being bred into our varieties.

Wade Malchow, MillerCoors...

Technology is going to drive a great deal of change in Agriculture in the coming years. More data than ever before is going to be available to farm managers. From genetics to machinery, imagery, sensors, and the Internet of Things (IoT), there is going to be ever increasing amounts of data available to crop managers in helping improve profitability, efficiency, productivity, and sustainability. The trick will be sorting out how to use and manage the data, and which data are best to get to a result. We would suggest that growers need to stay up to date, keep themselves informed, and learn about some of the new tools in use and under development – VR/LESA/LEPA irrigation application, precision crop protection and plant food application, cover crops, soil health strategies, and increasing levels of machinery automation and artificial intelligence, to name a few. It will be key for growers to set realistic expectations of how these technologies may be useful on their particular farm. MC is also investigating how future tools will help improve malt barley quality, yield, efficiency, and sustainability. We look forward to a mutual sharing of learnings and ideas with growers.

Michael O'Toole, Great Western Malting...

We continue to see opportunities and strong performance from winter barley varieties and are evaluating some new varieties now. These varieties offer promise from the standpoint of being attractive to farmers with an additional planting, but also tend to be less water intensive and have a lower risk profile. Likewise we see technological innovation, improved farming practices and further varietal development will continue to drive more efficiency and productivity for the farmers, producers and end users of barley.

Q.3. It appears that the traditional lager beers are losing market share to craft beers, particularly among millennials. What is your company doing to build momentum in the domestic beer market?

Jess Newman, ABI...

We're reminding our consumers about the heritage and quality behind our beers. Recognizing the generations of farmers who produce our fresh ingredients that make up our beers that Americans know and love is important to us. A key ingredient, barley, is the backbone of beer and we're thankful for the strong partnerships we have with our growers. As a company, our focus is bringing people together over beer, and that starts with thanking the people who make it all possible. Barley today – Budweiser tomorrow.

Marty Maloney, MillerCoors...

While craft beer continues to grow, beer in general has unfortunately lost share to wine and spirits and as an industry, we are trying to bring more drinkers back into the category.

Specifically at MC, we have two of the three biggest beers in the country in Miller Lite and Coors Light. Miller Lite has shown strong trends recently, gaining segment share the last 15 quarters and has actually grown in volume in 9 of the last 10 weeks, so there is plenty of momentum to build off of right now. Despite less positive trends for Coors Light, it remains the second largest beer in the country. And we are putting a tremendous amount of focus on reinvigorating the brand.

Michael O'Toole, Great Western Malting...

Our long-term view is relatively consistent with the industry consensus of a 1-2% decline in domestic beer sales, small continued growth for imports, neutral to slightly decreasing (1-3%) volumes for larger brewers and probably small growth in the craft segment. These trends are being driven primarily by demographics. We see increasing volatility within the craft segment, with continued growth for the smaller and local craft brewers offset by a pullback within larger regional craft brewers. Idaho is well positioned to weather these market shifts, given its advantages with optimal growing conditions for barley and fewer competing crops. We have seen this trend unfold over the last decade as Idaho is now the largest US barley production area and has remained relatively consistent in terms of volume.

Q. 4. How are your barley sustainability programs delivering tools to increase efficiency?

Jess Newman, ABI...

Our Anheuser-Busch agronomists have learned a lot about barley production practices from Hamer down to Twin Falls, which helps them recommend best local practices when growers have questions or start a new variety. We've also learned about reducing outliers – for example, a grower applying significantly more nitrogen than his or her neighbors. In a situation like that, we'd explore fertilizer optimizing practices with the grower. This would benefit the grower's bottom line and regional water quality. We have also learned from our research on proper fertilization, including amount, timing, and method.

Our SmartBarley project on Low Elevation Sprinkler Application (LESA) pivots is also adding value to our grower base. We are seeing up to 20 percent water savings, less lodging, and less disease pressure from dropping sprinkler heads closer to, and sometimes into, the canopy. We have also tested this technology

continued on page 5

IDAHO MALTING & BREWING INDUSTRY LEADERS:

Jess Newman – U.S. Director of Barley, Anheuser Busch InBev, Idaho Falls, ID

Wade Malchow – Senior Manager of Barley, Molson Coors, Huntley, MT

Marty Maloney – Communications Manager, MillerCoors, Chicago, IL

Levi Walker – Barley Agronomist, Longmont, CO

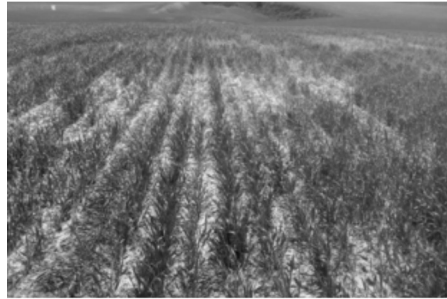
Michael O'Toole – President, Great Western Malting Co., Vancouver, WA

Finding IPM strategies to control damaging wireworms

by Dr. Arash Rashed, University of Idaho Assistant Professor of Entomology, Aberdeen Research & Extension Center

Idaho is observing a resurgence of wireworms, the larval stage of click beetles, across its cereal growing regions. Currently, neonicotinoid seed treatments are the only pesticide option registered in cereal crops, and these treatments often fail to provide adequate protection to the emerging grain seedling and developing crop. Alternative wireworm control options are needed to mitigate crop emergence failure, delayed plant growth and reduced yields. With funding from the Idaho Barley and Wheat Commissions, as well as the United States Department of Agriculture (USDA-NIFA), we have been evaluating various cultural and biological control methods to manage wireworms. Our biological control studies have been focused on the efficacy of two of the wireworm natural enemies, a nematode and a fungus, as part of a more comprehensive Integrated Pest Management strategy to improve wireworm management in the Pacific Northwest and Intermountain regions.

Wireworms are particularly challenging to control. In part, this is because they live in the soil for multiple years, feeding on roots and other underground plant tissues (e.g. potato tubers). When environmental conditions are not favorable, they move deep into the soil profile and become inactive until conditions are suitable again. In the soil, wireworms share habitat with many natural enemies. Indeed, wireworm mortality due to entomopathogenic fungus, bacteria and nematodes have been documented in the past. However, information has been limited as to whether efficacies of entomopathogenic fungi and nematodes remain consistent among soil types and whether a



combined use of nematode and fungus would improve efficacy of the biological control approach.

In collaboration with colleagues at Washington State University, we have evaluated the effectiveness of two biological controls in both field and greenhouse setups. While the field component is currently ongoing, our greenhouse evaluations with the entomopathogenic **nematode**, *Steinernema carpocapsae*, and the **fungus** (EPF), *Metarhizium brunneum*, has been completed. Our studies showed variability in post-emergence crop damage between the fungus and nematode containing treatments and between the sand- and peatmoss-dominated soil types. Wireworm mortality was greater with the fungus treatments, regardless of soil type, and control was highest in fungus treatments in peat-moss rich soil. Further, our results indicate that nematode control was more effective in protecting plants in the sand-dominated soil, which might be due to improved dispersal and survival of the nematodes in more porous sandy soils. However, in a previous study we also showed that wireworm damage relatively higher in sandy soil compared to soil with added peatmoss; quicker water depletion in the porous sand likely triggers wireworms to search for moisture in plant tissues.

The application of nematodes and fungus in potted greenhouse trials appears to be a promising IPM strategy to control wireworms. Further study is needed under field circumstances to determine effective application doses and impacts from environmental variables.



UI scientists Arash Rashed, left, Juliet Marshall, center, and Chris Rogers, right, educate growers at summer 2018 field days

Using cover crops and management intensive grazing in a barley rotation

by Carmen Willmore and Lauren Golden, UI Extension Educators (Lincoln and Blaine counties)

Producers are showing a greater interest in cover crops as a forage source for grazing livestock. Cover crops can be intensively managed as a great forage source, but with some caution and considerations. Management intensive grazing (MIG) refers to a grazing system where animals are allowed to graze only a small portion of the pasture, while other paddocks are rested and allowed to recover. Grazing annual cover crops using MIG is a great way to add an additional rotation crop and produce income for the farm. Species of cover crops planted, class of cattle, and accessibility to fencing and water should all be considered before adding cover crops as an annual forage crop.

With a 2017 funded SARE (Sustainable Agriculture Research & Education) Producer Grant, Pat Purdy of Picabo Livestock wanted to profitably graze cattle on a multi-species blend of annual plants, to in turn improve soil health, reduce water, reduce commercial fertilizer inputs, reduce soil erosion by eliminating bare soil, and improve wildlife habitat by eliminating winter fallow. The Purdy farm and a team of UI Extension Educators and a UI Specialist developed a two-year on-farm replicated trial for monitoring soil health with a cover crop and MIG system. In addition, to a soil health focus, Purdy was looking to save water by installing a LESA (low-elevation spray application) on half the pivot in year 1 to compare water savings.

The project was launched in early May of 2017 with a no-till seeded cool-season mix of forage barley, forage oats, forage peas, common vetch and purple top turnip. Cost of mix did not exceed \$30/acre. All the species in the mix grew successfully, however, not all had the same regrowth and forage potential. The oats and barley in the mix grew quickly and provided feed early. Once grazed, both the oat and barley showed regrowth potential by producing additional tillers, but oat was more productive in regrowth. As the longer days of summer came on, the barley headed and more or less finished. The oats headed but continued to produce new tillers as well. The peas and vetch responded well to grazing when grazed early. The peas were available earlier on, while the vetch, a perennial legume, took time to germinate and grow. The turnips grew quickly, providing greens and tubers which were excellent feed, especially as the cattle learned to eat them.

Following the first grazing of the cool-season mix, Purdy planted a warm-season mix to add additional

continued on page 4

USING COVER CROPS AND MANAGEMENT INTENSIVE GRAZING IN A BARLEY ROTATION

continued from page 3

late summer forage. However, this warm season planting was determined to be not effective because it was unable to compete with the residue and regrowth from the cool-season mix. Also, as the oats and barley headed out, seeds were dropped which sprouted and provided adequate fall forage. As such, a producer should look to do one planting of annual cover crops for a MIG system.

Choosing your cattle and when to use them.

The next consideration is when to put cattle in and how many. In a MIG setting it is common practice to move cattle at least once, sometimes twice a day to achieve the target grazing goals. Class of cattle can make an impact on this as cows are typically less selective grazers and will graze more uniformly. However, cows do not have as high of a potential for gain and will not be as profitable as stockers that are in a higher conversion state. This is especially true if the grazing is being paid/pound of gain. Simply put, this system will work with any class of livestock but is more profitable with growing cattle.

In the SARE project, 45 days after seeding, cattle were put into the first paddock, which was approximately one acre in size and contained 200 head of 600 lb. spayed heifers. Purdy quickly realized that the high rate of forage growth required him to increase paddock size to 6-8 acres/day to allow the heifers to graze off the top of the plants to keep the field in relatively the same growing phase. Thus, for a producer looking to plant significant acreage for grazing, it is best to get onto the forage before you think it is ready.

Secondly, to effectively graze large acreage of cover crops requires the proper head of cattle. For Purdy's



148 acres, the 200 head were not enough—A minimum of 300 head would have been ideal. As a result, many of the cereal varieties had headed out, which decreased forage quality. Total forage consumed per acre over the season was 2,408 lbs. This is a low estimate due to not enough cattle to effectively consume all the available forage. The cattle were estimated to have consumed a mere 40% of what was available—which was estimated at over 6,000 lbs of forage per acre. Advice to other producers is to use one herd with the appropriate number of cattle to graze the field quicker, or split the herd into two grazing groups to cover the field incrementally. This allows you to get the most benefit out of the field, without letting the cereal varieties in the mix head out. In total, Purdy was able to get four grazing cycles off the annual forages.

Lastly, the class of cattle can play a major impact on the profitability of a grazing scenario like this. In the SARE project, the cattle used were spayed heifers. The cattle worked well as grazing units, however, it was noticed there was significant “riding” of heifers which takes away from their grazing activity and can cause injury such as broken shoulders. Using a stocker animal is preferable in this situation because they are in a growth period and can potentially get 2-3 lbs. of gain per day. Using steers may increase your gain/day conversion as well as eliminate the issue of riding and injuries. If you are going to graze cows it may be better to price the pasture on an AUM basis since daily gain will not be as high in the cows.

Cattle management considerations. Pink eye was a management issue that we observed. Once we got into July-August, there was an increase in the number of cattle that were exhibiting symptoms of pink eye. We believe this was caused when they put their heads down to graze and got the pollen or awns from the headed out cereal grains into their eyes. A suggestion

is to have more cattle so as to avoid the cereals from heading out and use awn-less cereal varieties. One final thing to consider is how you will fence and water the cattle. In this situation, they had stock tanks and a water truck to fill those using floats so that water is constantly available. This is a real management consideration as 200, 600-700 lb. cattle can drink up to 2,600 gallons of water per day and will need a constant source of water.

Water savings. Purdy observed significant water savings with the LESA. The LESA span delivered 3.1 inches of additional water into the soil over the course of the season relative to the original equipment (Nelson 15psi spinner at 6 ft height). This additional water represents the opportunity to save between 15-20% of pumped water. Some water movement was detected as deep as 32 inches under the LESA and only to about 12 inches under the control.

Summary. Using cover crops in a management intensive system is a novel idea but if executed well can give you good gains on growing cattle while benefiting your fields. Make sure to consider the mix you will use, especially cereal varieties that may cause a higher risk of pink eye. Also make plans for fencing and water ahead of time as this can be a substantial investment and management headache if water is not readily available in the area. Carefully choose what class of cattle you will use in the system and consider their gain potential and how you will price the pasture.

In 2018, the Purdy Ranch rotated back to barley with the hopes of reducing commercial fertilizer, while maintaining yields. The team set up replicated trials of reduced fertilizer and will be monitoring yields this August. Purdy and the team will evaluate whether a one-year rotation of cover crops and MIG has an effect on soil fertility and barley yields.



IDAHO SOLIDIFIED TOP BARLEY PRODUCER SPOT WITH MALTING AND BREWING INDUSTRY INVESTMENTS *continued from page 2*

in potatoes with good results, confirming it is an option for the entire rotation. We will be expanding this project in 2018 and providing support for additional LESA pivot conversions.

Our agronomists would love to discuss what we're finding through our research, projects, and SmartBarley surveys. Our hope is to provide agronomic recommendations and support to growers.

We welcome any and all growers to use our agronomy team as a resource."

Levi Walker, MillerCoors...

MillerCoors requires all contracted malt barley growers to participate in the company's sustainability efforts through the MillerCoors Grower Portal. This portal allows growers to input information pertaining to field size and location; inputs such as pesticide, fertilizer and irrigation applications; tillage practices

and average yield per field. We are currently creating a platform to share this information with growers, in addition to NDVI imagery for in-season fields. MillerCoors also committed to reducing water usage by 10% in its Ag Supply Chain by 2025 through a combination of grower education and malt barley breeding advancements. MillerCoors also is an active participant in the Walmart Gigaton Project, which seeks to reduce greenhouse gas (GHG) emissions by 1 gigaton by 2030.

Trade tensions damage U.S. agriculture

by Kelly Olson, IBC, and Laura Johnson, ISDA Marketing Bureau Chief

By most measures, the U.S. maintains some of the most open trade policies of any country in the world. In 1993, the U.S.'s average tariff was 5.6% compared to China's 39.1%. Twenty years later, those average tariff levels have dropped to 3.4% and 9.6%. The U.S. maintains tariffs of more than 15% on only 2.7% of all tariff lines, compared to 6.8% for Canada, 3.7% for Japan and 5.1% for the EU. But the U.S. also allows fewer duty-free imports than some of our trading partners: 45.9% compared to 75.3% in Canada and 52.9% in Japan.

Our relatively open borders and high trade deficits have fueled a ferocious debate among blue-collar

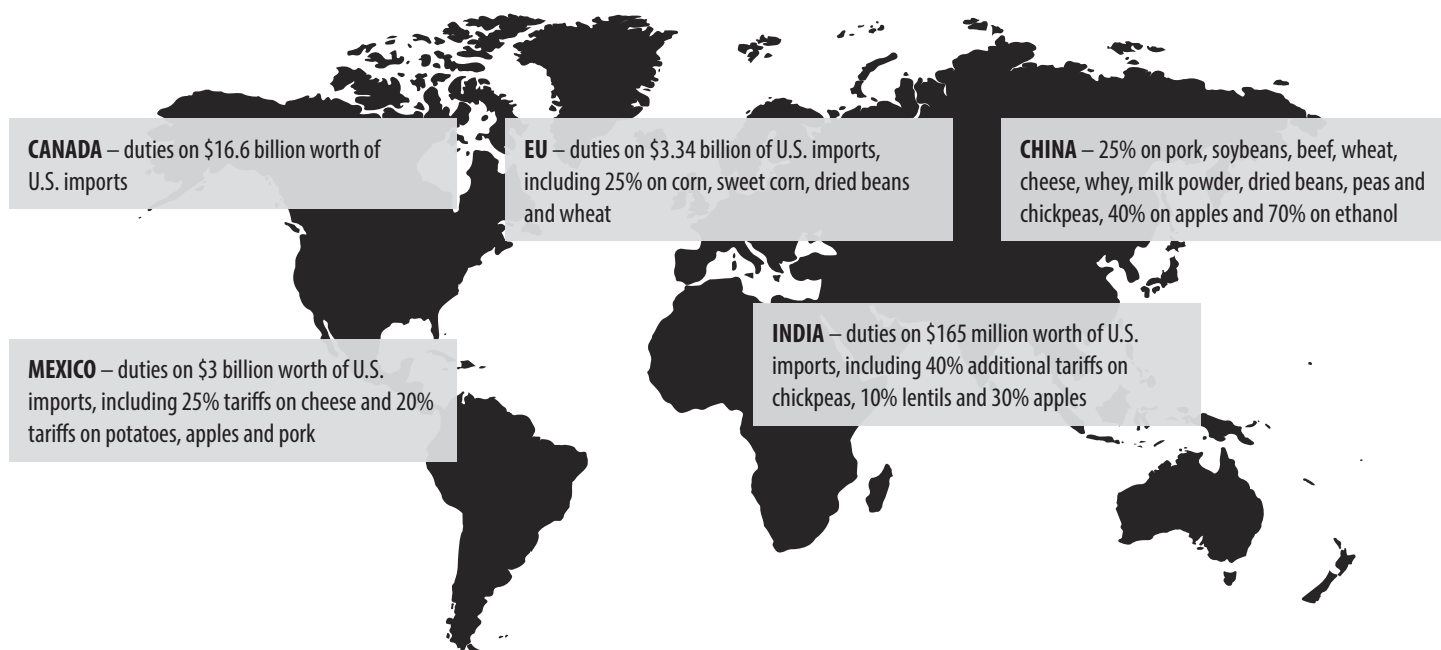
workers and some U.S. politicians about what to do about the large trade imbalances we run with certain trading partners, namely China and the EU. In 2017, U.S. imported more than \$505.6 billion in Chinese goods, compared to U.S. exports to China of \$130.4 billion. While these trade deficits have caused dislocations in certain economic sectors, President Trump's approach of slapping tariffs on China and other trading partners targeting key sectors like steel and aluminum have triggered retaliatory tariffs against U.S. agriculture.

The **currently escalating tariff war between the U.S. and China has put a big target on U.S. ag exports**. In March the U.S. announced it would impose 25% tariffs on Chinese steel imports and 10%

on aluminum imports under a Section 232 national security trade case. China immediately responded with equivalent tariffs against U.S. fruit, nuts, wine, pork, and ethanol. In April, the U.S. followed with an additional round of tariffs against \$34 billion worth of Chinese imported goods under a Section 301 technology/intellectual property theft trade case. China responded with retaliatory tariffs against U.S. soybeans, corn, sorghum, wheat, rice, pork, beef, chicken, dairy products, fruits and vegetables, processed foods and fish. In June, President Trump threatened 10% tariffs on an additional \$200 billion worth of Chinese imports and China threatened a proportional response. In early August, Trump said

continued on back page

BY THE NUMBERS: Retaliatory tariffs levied by U.S. trading partners in response to 25% U.S. steel tariff & 10% U.S. aluminum tariff



TRADE TENSIONS DAMAGE U.S. AGRICULTURE

continued from page 5

these additional tariffs should be raised to 25%. On August 7, President Trump announced another batch of Chinese imports worth \$16 billion would face 25% tariffs under the ongoing 301 Trade Case, bringing the total amount of imports facing duties under this case to \$50 billion. Not surprisingly, China immediately followed with plans to impose an equivalent amount of tariffs on their imports from the U.S., including crude oil.



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Big Thank You

to Idaho barley producers, malting, food and feed barley industry, research scientists and extension educators, who I have had the great privilege of working for and with during the past 24 years. YOU are the finest, most dedicated people involved in Idaho Agriculture. Together we have built Idaho into the largest barley producing state in the country. I see many exciting opportunities ahead for IDAHO BARLEY. THINK BARLEY!!

Kelly Olson, Administrator

Served IBC June 1, 1994 – August 10, 2018