Farm & Ranch
Monthly Magazine
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AG ROUNDUP

February 2020

National Hard Spring Wheat Show

See pages 18-25, 28-31

Nelson Family Cattle Seed Stock

By Renee Nelson

The Nelson family has called Wibaux County, Montana, home since 1909. Originally started by Tom's great grandfather, David Muggah, and grandmother Alberta (Muggah) Nelson on the road between Wibaux and Baker, MT, the Nelson family has been in the cattle seed stock business since the 1960s. Nelsons are strong proponents in crossbreeding and provide top cutting edge Simmental and Angus genetics. The Simmental genetics provide high growth, higher cut-ability and yield and the Angus genetics provide strong maternal genetics and high carcass quality. The crossbred cow provides better cow longevity, lifetime production and calf survive-ability with heterosis that can give a 25% or higher advantage. Their customers need heterosis along with great genetics. By combining the strengths of the highest value breeds of cattle available and focusing on practical production traits, their SimAngus hybrids are a great asset and well received by their customers. Too often crossbreeding is difficult, particularly in the large pastures their customers run in this country. Using composite bulls just makes it easier to crossbreed and maintains most of the high bred vigor. They run a few commercial cows in addition to their registered ones and the crossbred females are simply the most profitable.

The "breaks" the Nelson herd calls home in the summer months are aesthetically beautiful and offer wonderful hunting opportunities, but provide a rugged and harsh environment for running cows. Because of those conditions and southeast Montana's propensity for drought and tough winter conditions, basic fundamentals of production are necessary. Females that calve on their own, bring home a live calf in the fall and rebreed are simple but critical priorities of the Nelson's. They raise cows that work for them. They just don't have the labor here to baby the cows. They have to do almost everything on their own. These philosophies of breeding and development ensure customers of durable genetics that generate profit under almost any condition. This is evident in the high number of 11 and 12 year-old brood cows still producing in the Nelson Livestock Company cow herd.

Working on the ranch now are Tom and Renee and their son Brent. They also have Brent's kids, Taylen, Gavin and Reggie, helping. They are getting ready for their annual bull sale that will be held at the ranch on Monday, April 6. They will have a fine offering of Simmental, Sim-Angus, and Angus yearling bulls. This year they will also have 12 coming 2-year-old bulls. These bulls have not been previously offered or used, so if you are looking for a little older bull they can fill the bill. Their bulls are built to work in big country. Performance here is bred on, not fed on. Stop in and see the bulls anytime.

Call the Nelsons for more information: Tom 406-588-3371 or 406-939-1252 or Brent 406-588-2697 or 406-978-2697. Mark the date on your calendar: April 6, 2020.

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March 24, 2020
1 p.m. MDT :: Bar JV Sale Barn
North of Sidney, Montana

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100 :: Angus Bulls
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Contact us for a sale book or to view the bulls.

MONDAK

AG DAYS & TRADE SHOW

A Sidney Area Chamber of Commerce and Agriculture Event

March 12 - 13 2020

Richland County Fairgrounds
Event Center
Sidney, Montana

Thursday, March 12

Trade Show features more than 40 booths!

Trade Show Hours
Thurs: 8:00 a.m. to 6:00 p.m.
Fri: 8:00 a.m. to 2:00 p.m.

8:00 a.m. ..... Trade Show Opens
9:00 a.m. ..... Producing Hemp—Chengci Chen—Director of the Eastern Ag Research Center
10:00 a.m. ..... *Weed ID Workshop** —Brian Jenks—NDSU Cropland Weed Extension Specialist
12:00 p.m. ..... Lunch Break—Served On-Site—Provided by the Sidney FFA Alumni
1:00 p.m. ..... *The Importance of Adjuvants in Pesticide Application** Paul Detloff—Loveland Proprietary Products
2:00 p.m. ..... Young Farmer/Rancher Panel—Local Individuals
3:00 p.m. ..... Break
3:15 p.m. ..... Grazing Corn in the winter, Part 2.— An update from the 2019-2020 Grazing Season— Marlin Johnston— Fichey Farmer/Rancher
6:00 p.m. ..... Trade show Ends

Friday, March 13

7:00 a.m. ..... Sidney Chamber Breakfast—Sponsored by Advanced Communications
9:00 a.m. ..... Estate Planning In Montana—Marsha Goetting— MSU Extension Specialist
11:00 a.m. ..... Farming and Ranching Succession in the Shark Tank of WHAT IF. Ron Hanson—University of Nebraska—Agricultural Economics Specialist
12:00 p.m. ..... Lunch Break—Served On-Site—Provided by Sidney FFA Alumni
12:30 p.m. ..... Ron Hanson—Session Continued
2:00 p.m. ..... Ron Hanson Session Concludes/Trade Show Ends

5:00 p.m. ..... Pre-Banquet Social
6:00 p.m. ..... MonDak Ag Days Banquet—featuring The Peterson Farm Brothers

Banquet tickets can be purchased the day of the event at the Stockman Bank booth at the Trade Show.

Thank you to our break sponsors: -Montana Farmers Union -Blue Mountain Feeds -Nutrien Ag Solutions Anipro/Xtraformance Feeds -Beta Seed

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BANQUET

Friday, March 13
5 p.m. at the Event Center

Tickets $45 each
Available for purchase at:
-Richland Co. Extension
-Sidney Chamber
-Sidneymt.com
-Stockman Bank
-Tri-County Implement
*Includes (1) drink ticket for social

FEATURING

Peterson Farm Brothers

With a passion for promoting their families lifestyle of farming, the Peterson Farm Brothers took a new approach. In 2012 they decided to create a parody about farming entitled "I'm Farming & I Grow It" - a play on the LMFAO song, "I'm Sexy and I Know It." Within just two weeks their video went viral on YouTube and had over 6 million views. The brothers said the song took their ag focused message and spread it worldwide. Since releasing the song, they have traveled the country to share their view on what makes farming important. With their interesting and fun approach to agriculture awareness, you won't want to miss out on the chance to see them at the banquet Friday night!

FOR MORE AG DAYS INFO:

Contact the Sidney Chamber at:
406-433-1916 or visit our website at
sidneymt.com
Find us on Facebook!
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MSU Undergraduate Tests Building Material Made Of Crop Byproduct

By Marshall Swearingen, MSU News Service

BOZEMAN — The leftovers of the tall industrial hemp plant often languish on Montana farms because they're difficult to till back into fields or otherwise dispose of. But it's because those stalks are so tough and woody that this agricultural byproduct is finding a new purpose in a lab at Montana State University.

In a research project funded in part by the Montana Farmers Union, Drew McNally, a junior majoring in civil engineering, combines the plant's chipped-up inner stalk, called hurd, with a lime-based binder to make what's called hempcrete.

"It doesn't really flow like normal concrete," said McNally as she explained how she tamped the material into forms to make standardized cylinders for testing. The material is relatively lightweight and could be used to provide insulation and structure in walls, she said.

Working with Kirsten Matteson, Department of Civil Engineering assistant professor, in MSU's Norm Asbjornson College of Engineering, McNally uses massive hydraulic pistons to measure the crushing strength of soup can-sized cylinders of hempcrete made with different proportions of cement and lime.

"I really like the hands-on side of it, seeing how each of the different mixes perform," said McNally, whose involvement is funded by MSU's Undergraduate Scholars Program.

The team, which includes Michael Berry, associate professor of civil engineering, will also measure the insulating properties of the different hempcrete mixes. "As far as we know, this hasn't been done yet for hempcrete," said Matteson, who has years of experience in materials testing and is leading the project.

"We're always exploring possible uses for what would otherwise be waste materials," said Matteson, who is also studying new applications for recycled plastics in plastic-aluminum composite beams. "When we use waste materials in these applications, we often sacrifice some strength, but that's OK if we get other properties that are desirable."

The results of the project could help builders fine-tune their mixing of the material as well as provide data necessary for building officials to approve its use in structures, according to Kirby Hancock, Constructive Solutions lead architect at the design-build firm, who approached MSU with the research idea and secured funding from the multi-state Farmers Union Enterprises to cover the project's material costs.

Drew McNally, center, along with her faculty advisor, Kirsten Matteson, right, and project partner Kirby Hancock look at a sample of hempcrete, a building material made mostly of byproduct hemp stalks. (MSU Photo by Adrian Sanchez-Gonzalez)

McNally surveys data collected during a structural test of a hempcrete sample in an MSU materials lab. (MSU Photo by Adrian Sanchez-Gonzalez)

"I think there's a lot of potential for this material, which is why I'm excited about it," said Hancock, who earned his bachelor's degree in environmental design and master's in architecture at MSU.

According to Hancock, hempcrete is commonly used in many parts of the world, especially Europe and Asia, and is sought-after by those trying to minimize their environmental impact — the material is made mostly of the crop byproduct and requires little energy input. Hempcrete is also valued for its resistance to fire, mold and pests, and as a more natural alternative to foam-based insulation, he said. It is typically packed into wall spaces between wooden members to create a solid, insulating panel, but the MSU research could lead to other construction applications.

The 2018 Farm Bill legalized hemp cultivation in the U.S., and last year, 209 licensed growers in Montana planted 50,000 acres of the crop, more than double the amount of the previous year. Industrial hemp is regulated to ensure the plants have minimal THC, the active ingredient in cannabis. Most hemp is grown for its CBD, a compound touted for its medicinal properties, or for hempseed oil used in food and cosmetics.

Once the seeds and flowering parts of the plant are harvested, the remaining stalks are problematic for many growers, said Justin Loch, Montana Farmers Union director. "It just sits there and farmers have to figure out what to do with it — bale it and use it as animal bedding, or even burn it," he said. "Being able to use the whole plant would mean more revenue and more markets for growers."

McNally will present initial findings from the study at the 2020 National Conference on Undergraduate Research, which MSU will host on March 26-28. She said she appreciates applying what she has learned in her classes to a real-world problem. "I like working on something that can have a positive impact," she said.

This story is available on the Web at: http://www.montana.edu/news/19543.

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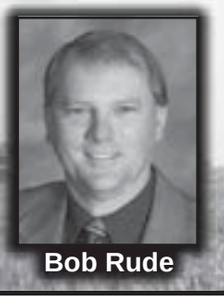
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Thurs, Feb 13 • 7 - 9am | Williston ARC | Everyone Is Welcome

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Schedule of Events

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Join Us At The Williston ARC

February 13th

(822 18th St E • Williston, ND)

ARC TENNIS COURTS

7-9am .....Ag Appreciation Breakfast
Sponsored by American State Bank

ARC MEETING ROOM

7:45am..... Welcome
Mayor Howard Klug
8am..... Seasonal Weather Outlook
9am..... NDSU Spring Wheat Breeding Update
9:30am..... Small Grain Disease Update
9:50am..... Small Grain Agronomy Update
10:10am..... Break
10:30am..... Soil Acidity in Montana
11:15am Soybean Fertility in Western ND & Sulfur Management
12pm..... Lunch
Sponsored by ND Wheat Commission
12:30pm...ND Wheat Commission Update
1:05pm..... Break-Out Sessions
Pigweed ID, Herbicide Resistance, Seed Quality & Real-Time Sensors
2:05pm..... Break

Weather Outlook
Markets & Land Values
Diseases & Grain Quality
Spring Wheat Breeding

67th

2:30 pm..... Biology & Management of Waterhemp & Palmer Amaranth
2:50pm..... Basics of Successful Soybean Management in Western ND
3:20pm.....Saline Seep Reclamation With Salt-Tolerant Alfalfa
3:40pm.....Market Outlook, MFP, Land Values
4:30pm.....Social Hour
5:30pm.....Awards Dinner
6:30pm....Regenerating Soil Heath While Improving the Bottom Line & Diversifying Ag: Thinking Outside the Fence
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25th Annual Production Sale

Wednesday, March 4th, 2020

1:00 PM CDST

30 Red Angus Yearling Bulls

Sitting Bull Auction • Williston, North Dakota

Reference Sires:

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40 Yearling Commercial Red Angus Heifers From Early Morning Red Angus

These heifers were mostly sired by Early Morning Angus Bulls.

Visitors are welcome to view the cattle until March 2nd at Sheldon's Feedlot south of Ray, ND and beginning March 3rd until sale day at Sitting Bull Auction in Williston, ND

Catalogs, Call Carl Frisinger at 701-664-2668

2020 Montana State Hemp License Application Period Is Open

Montana Department of Agriculture Will Accept Hemp Applications Through April 30, 2020

Helena, MT – The Montana State Hemp Program is now accepting license applications for the 2020 growing season. The Indoor/Outdoor Hemp License Application is available on the Montana Department of Agriculture (MDA) website and is due by April 30.

In 2020, hemp growers can expect licensing procedures very similar to those that were in place in 2019. MDA will continue to operate its Montana State Hemp Program under authorities provided in the 2014 Farm Bill.

"Montana's hemp industry shows incredible potential," said MDA Director Ben Thomas. "I'm looking forward to another year of continued growth."

Hemp licenses are issued in two progressive stages: planting and production. First, the department issues a planting license to approved applicants so they can purchase seed or live plants to plant or propagate hemp. A fee of $850 is due with the initial application. Next, applicants are required to submit a planting report to confirm information about their hemp varieties and crops planted. Based on the four risk-based categories of hemp varieties (A, B, C, D) developed by the department, the level of review and frequency of crop testing are determined. If Category C varieties are planted, a $250 fee for each variety is required along with planting reports to cover sampling costs. For hemp variety categories visit http://www.mtrules.org/gateway/RuleNo.asp?RN=4%2E19%2E108. The second stage, a production license, is issued to successful applicants after planting reports are received so they may produce and harvest compliant hemp. Licenses are valid from the time of issuance until April 30, 2021.

Montana's hemp program grew significantly from 58 licensees in 2018 to nearly 300 in 2019. Acreage more than doubled in 2019 to over 50,000 acres, which makes Montana a leading state for hemp production. Questions about hemp licenses can be sent to hempinfo@mt.gov.

The Montana Department of Agriculture's mission is to protect producers and consumers, and to enhance and develop agriculture and allied industries. For more information on the Montana Department of Agriculture, visit agr.mt.gov.

MonDak Ag Days & Trade Show Sidney March 12-13

The Peterson Farm Brothers are set to entertain at this year's MonDak Ag Days and Trade Show two-day event held at the Richland County Fair Event Center on March 12-13.

The trio will make their appearance during the annual banquet on Friday, March 13. Tickets for the banquet include (1) free drink during the pre-banquet social, dinner and the great show from The Peterson Farm Brothers.

The brothers are from Kansas where their family lives the farm life. They are known for their entertaining and educational videos they put up on YouTube, farming posts and updates on their Facebook, Twitter and Instagram accounts. Educating and informing the public about farming and agriculture is a passion for the group.

The brother's video "I'm Farming and I Know It," a parody of LMFAO's "I'm Sexy and I Know It" went viral and had more than six million views in just two weeks. The Peterson Farm Brothers not only promote farming and agriculture to the online audience, they've been traveling the country sharing their knowledge and spreading the word.

The Trade Show will have more than 40 different booths and vendors. Thursday's program topics include producing hemp, a weed ID workshop, the importance of adjuvants in pesticide application, a young farmer and rancher panel, and grazing corn in the winter.

On Friday, Ron Hanson, University of Nebraska, will be giving his presentation on Strategies for Family Farming Success in the Shark Tank of WHAT IF. Marsha Goetting will also be speaking on Friday about Estate Planning in Montana.

Ron Hanson's session is meant to instill the importance and need for contingency planning in case of unexpected changes in the organization ownership structure and/or management leadership of their family farming operation. He will also cover points regarding how to handle crisis situations within the family. It's never too early to put a contingency plan into place.

The 2020 Ag Days Gold sponsors are Stockman Bank, KEYZ Radio, Tri-County Implement, Agri-Industries, Sidney TBID and C&B Operations. Silver sponsors for the event are EGT, Farm Bureau Insurance, Farm Bureau Federation and Sidney Sugars.

The Peterson Farm Brothers

DK Top-Coming-To-Town Production Sale

Saturday, March 7, 2020

2 p.m. CST • Sitting Bull Auction, Williston, ND

DVAuction

Auctioneer: Butch Haugland & Amber Haugland: 701-570-3604 or 701-965-6234
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LJC MISSION STATEMENT P27

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Additional Reference Sires:

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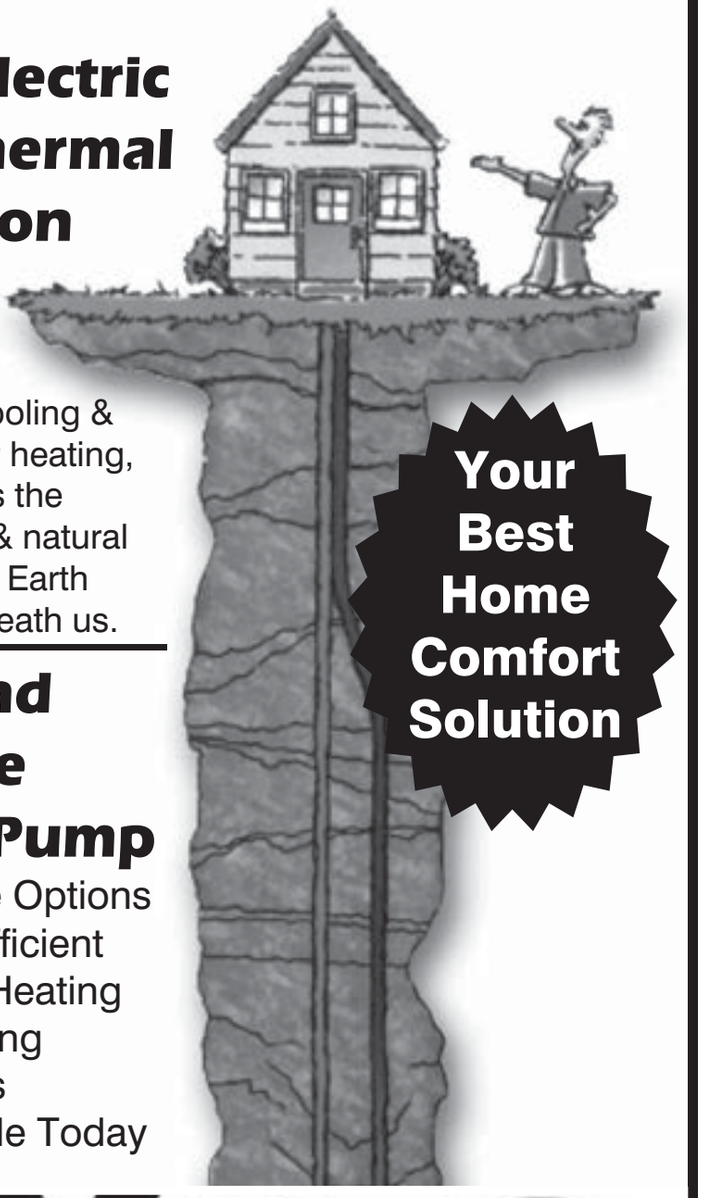

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Williston Hard Spring Wheat Show 2020 & NDSU Best Of The Best In Wheat Production Feb. 13

NATIONAL HARD SPRING WHEAT SHOW

67th Anniversary

The Williston ARC will host this year's Hard Spring Wheat Show.

By Anna Dragseth

The Hard Spring Wheat Show 2020 & North Dakota State University (NDSU) Best of the Best in Wheat Production will take place at the Williston Area Recreation Center, 822 18th St. E., Williston, North Dakota on Thursday, Feb. 13.

The event will kick off at 7 a.m. with a free breakfast sponsored by the American State Bank & Trust in Williston.

Jared Marquis will be discussing the seasonal weather outlook at 8 a.m. Marquis is currently working on using satellite imagery to study atmospheric radiation and enhancing weather forecasting models with satellite data.

Next, Andrew Green, NDSU's spring wheat breeder and Department of Plant Sciences Assistant Professor, will give a spring wheat breeder's update. At 9:30 a.m., Andrew Friskop, North Dakota State University Cereal Crop Extension Plant Pathologist, will be discussing small grain diseases and will be giving an update on common diseases found around North Dakota.

Joel Ransom will be speaking about small grain agronomy at 9:50 a.m. Ransom's research and extension program are focused on applied, agronomic research that addresses issues in corn, wheat, barley, and oats important to North Dakota farmers.

At 10:30 a.m., Rick Engle, Montana State University Professor of Soil Science, who focuses on understanding soil nutrient cycling, will be sharing information on soil acidity in Montana. Engle's current projects include identifying fertilizer management strategies for enhancing nitrogen recovery by crops and soil emissions of greenhouse gases.

NDSU Extension Soil Specialist, Dr. Dave Franzen, will be speaking on the topic: Soybean fertility and sulfur management in western North Dakota at 11:15 a.m.

Around noon, there will be a free lunch sponsored by the North Dakota Wheat Commission.

After lunch, Dustin Johnsrud will give a North Dakota Wheat Commission update. Breakout sessions with Joe Ikley - pigweed identification, Brain Jenks - herbicide-resistant weeds (hands-on), Joel Ranson, and Andrew Friskop - seed quality and wet grain, and John Nowatzki - real-time sensors will follow.

At 2:30 p.m., Joe Ikley, NDSU's Extension weed specialist, will be talking about the biology and management of waterhemp and palmer amaranth. Next, Hans Kandel, NDSU extension agronomist, will be discussing the basics of successful soybean management in western North Dakota.

Around 3:20 p.m., Clair Keene, Williston Research Extension cropping systems specialist, will be speaking on the topic: Saline Seep Reclamation with Salt-Tolerant Alfalfa. After this, Bryon Parman, Extension Ag finance specialist, will give a talk on the grain market outlook for 2020.

Supper will be served at 5:30 p.m. Tickets must be purchased if attendees wish to eat supper. Supper tickets will be $10 and sold at the door.

At 6:30 p.m., two featured evening speakers, Jay Doan and Jerry Doan, Black Leg Ranch operators, will be discussing agricultural topics. Jerry Doan will be talking about regenerating soil health while improving the bottom line and Jay Doan will be speaking about diversifying agriculture: "Thinking Outside the Fence".

The Hard Spring Wheat Show 2020 & NDSU Best of the Best in Wheat Production event is open to anyone interested in learning more about agriculture. For more information on this event, please contact MSU/NDSU County Extension Office or Clair Keene at the Williston Research Extension Center 701-774-4315.

Black Leg Ranch Operators, Jay And Jerry Doan, To Speak At Hard Spring Wheat Show

NATIONAL HARD SPRING WHEAT SHOW

67th Anniversary

By Anna Dragseth

At 6:30 p.m., Jay and Jerry Doan, Black Leg Ranch operators, will be speaking at the Williston Hard Spring Wheat Show on Feb. 13. These featured speakers will be discussing the topics of diversifying agriculture and improving soil health.

Jerry will talk about, "Regenerating Soil Health While Improving the Bottom Line". Jerry is an active advocate for agriculture at the state and national level. He has demonstrated his passion for agriculture through lobbying and providing service in several different organizations. Jerry is currently the North Dakota Grazing Lands Coalition and Natural Resources Trust Board vice-chairman. He is a past chairman of the North Dakota Ag Coalition, North Dakota Beef Commission, North Dakota State Board of Ag Research and Education, and Rural Leadership ND.

Jay will be speaking about diversifying agriculture: "Thinking Outside the Fence". Jay is the 5th generation on Black Leg Ranch and is proud to carry on his family's ranching tradition while bringing a new approach to entrepreneurship. Prior to moving back to the ranch, Jay lived in Arizona and Texas, working in finance and marketing/brand development for Hensley Beverage Company and Anheuser-Busch. Jay considers his decision to work in the corporate world one of his best as it broadened his horizons and helped him think "outside the fence." It made him miss and appreciate life on the ranch and living in rural North Dakota. A decade after coming back to Black Leg Ranch, Jay is fully engaged in finding new ways to add value to the family business and bring more opportunities to his community. The Black Leg Ranch is home to Rolling Plains Adventures, a full-service hunting outfitter; Black Leg Events, an agri-tourism wedding and event venue; a craft microbrewery; and most recently, commercial meat sales.

In 2016, the Doan family was honored to receive the inaugural Aldo Leopold Conservation Award in

(Continued on page 22)

Jay (left) and Jerry (right) Doan, Black Leg Ranch, will both have panels at the Hard Spring Wheat Show.

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Black Leg Ranch Operators...

NATIONAL HARD SPRING WHEAT SHOW
67th Anniversary

(Continued from page 19)

recognition of their commitment to increasing rangeland plant and animal diversity. Jerry and his wife, Renae, have received numerous awards, including the Burleigh County Soil Health Award and the National Environmental Stewardship Award. In 2016, Farm Credit Services recognized Jerry as one of the top 100 Fresh Perspectives in Agriculture in the United States.

Jerry and Renae run the Black Leg Ranch, founded in 1882 by Jerry's great-grandfather, George Doan, along with their sons Jeremy, Jay, and Jayce in McKenzie, ND. The ranch encompasses 17,000 acres in central North Dakota, with approximately 14,000 acres of grazing land and 3,000 acres of cropland.

The ranch's primary focus has been reducing winter feed and input costs. The Doan family has installed more than 65 miles of high-tensile fence to create 90 pastures that are used for grazing cattle intensively. They move their cattle frequently to new grass because this mimics the behavior of bison that once roamed the North Dakota plains.

The Doan family strives to improve soil health and the natural resource base of the ranch so that it, in turn, supports abundant wildlife, healthy cattle, and diverse enterprises that provide a high quality of life for the Doans.

If you would like to learn more about the Black Leg Ranch, you can visit their website at www.blacklegranch.com.

Right: Jerry Doan will present, "Regenerating Soil Health While Improving the Bottom Line."

Below: Jay Doan will present, "Thinking Outside the Fence."

Biology And Management Of Waterhemp And Palmer Amaranth

NATIONAL HARD SPRING WHEAT SHOW

67th Anniversary

By Anna Dragseth

At 2:30 p.m., Joe Ikley will be discussing information on waterhemp and palmer amaranth at the Williston Hard Spring Wheat Show.

Dr. Ikley is the new North Dakota State University Extension Weed Specialist. He has conducted research on both palmer amaranth and waterhemp for six years in Indiana, and waterhemp for one year in North Dakota.

Ikley will be talking about the biology and management of palmer amaranth and waterhemp. "The main message will be that we do not want either weed in western North Dakota, as they can be both troublesome and expensive to control. Examples of problems caused by waterhemp in eastern North Dakota will be presented to highlight some of the challenges these weeds can present once they become established in an area," explained Ikley.

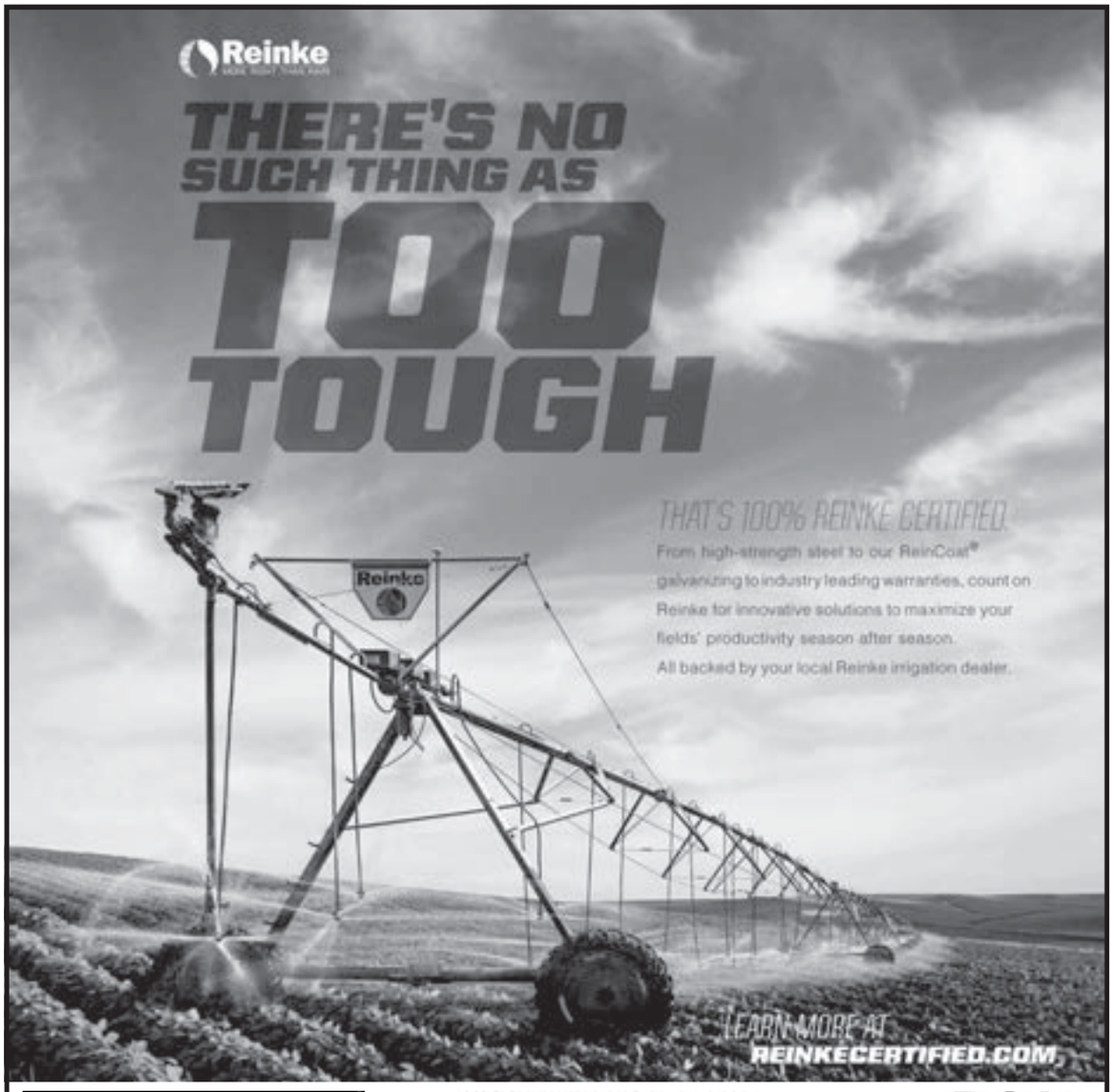
Palmer amaranth and waterhemp have both been found in North Dakota, but neither is established in western North Dakota. "These weeds are a different monster than our more traditional pigweeds when it comes to effective control. Prolific seed production, long emergence periods, and high propensity to evolve resistance to herbicides compared to other pigweeds make palmer amaranth and waterhemp more difficult to control. They also have a more rapid growth rate, which makes timeliness of an effective herbicide application critical for the overall management of these two weeds," stated Ikley.

Ikley has been a part of research that evaluated the growth rate and seed production capabilities of palmer amaranth and waterhemp weeds in Indiana. He has also assessed their control with currently available herbicide programs in corn and soybean.

The goal of his research has been to understand the biology of these weeds and how to control them with currently available herbicide tools. "Unfortunately, we are several years away from the potential for any new herbicides to control these weeds, so now the effort has to shift to integrating tactics, such as cover crops or Harvest Weed Seed Control, to preserve the herbicides we currently have and avoid widespread herbicide resistance in North Dakota," said Ikley.

In the future, Ikley will be evaluating the effectiveness of cover crops in eastern North Dakota for the suppression of waterhemp. "Southern states in the U.S. have evaluated the capability of cover crops for suppression of waterhemp and palmer amaranth, but we do not have any data from North Dakota where we often cannot produce the high levels of cover crop biomass that southern states obtain annually. I will also be evaluating when seed-shed occurs in waterhemp in North Dakota to determine if Harvest Weed Seed Control options, like the Harrington Seed Destructor, can work on waterhemp in North Dakota. This type of weed seed control is most viable on plants that have seed attached at harvest, and we do not know how much waterhemp seed is still attached to mother plants at harvest in North Dakota."

When asked what he would suggest to growers who deal a lot with these weeds, he responded, "Rotation of crops and herbicides remain some of the most important tactics for control of waterhemp and palmer amaranth. Practicing good agronomy, particularly in soybean, really help with control of these weeds. Crops that struggle to achieve a crop canopy are vulnerable to late-season populations of waterhemp or palmer amaranth. For those who do not deal with a lot of waterhemp or palmer amaranth, prevention is one of the best practices we have. Hand-weeding a few plants that have popped up in a field can save a lot of headache in future years if those plants are allowed to produce seed."



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Saline Seep Reclamation With Salt-Tolerant Alfalfa

NATIONAL HARD SPRING WHEAT SHOW
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Above: plots in Sept 2016 (3 months after planting alfalfa).

By Anna Dragseth

Dr. Clair Keene, Williston Research Extension Center Cropping Systems specialist, will be discussing saline seep reclamation with salt-tolerant alfalfa at 3:20 p.m. at the Hard Spring Wheat Show, Williston, ND.

Since June 2016, Dr. Keene has been researching how to prevent saline seep formation and growth. Saline seeps are discharge areas on the soil surface that are caused by salt accumulation at low points in the landscape. When salty groundwater is within six feet of the soil surface, it is pulled to the soil surface, and the water evaporates and leaves behind dissolved salts, which then creates a saline seep. They typically form at the bottom of hills and on the sides of slopes.

Some of the early signs of saline seep development is a flush crop growth combined with high crop yields, increasing moisture (causing inaccessibility), and abundant growth of Kochia and foxtail barley. The later signs are sparse germination of crop plants, declining crop yields, increasing numbers of salt-tolerant weeds, and the formation of salt crystals on the soil surface.

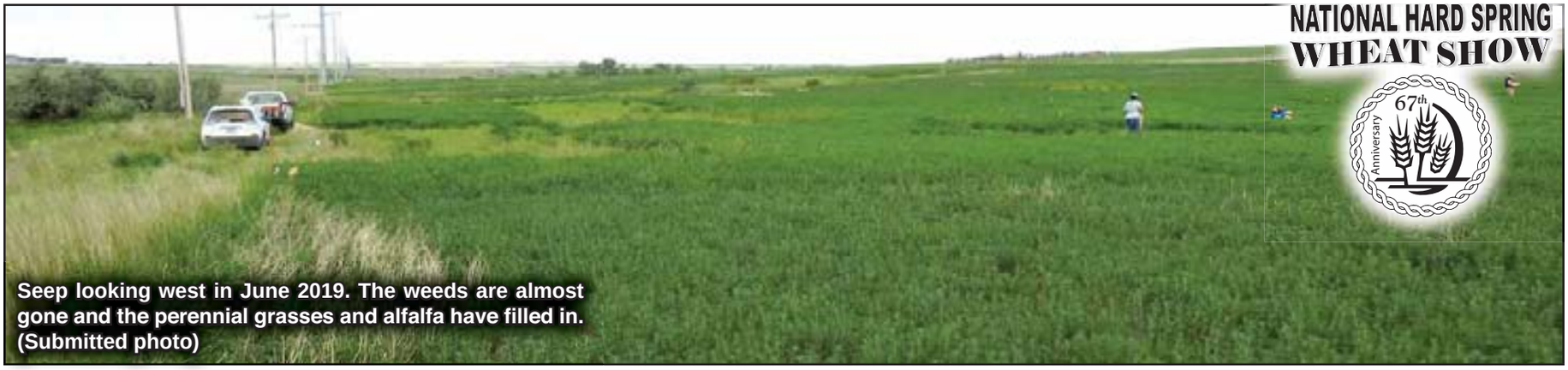
At the Williston Research Center, a saline seep occupies one to two acres of a dryland field. The seep has been around for approximately 20 years but began to increase in size within the last seven years.

Dr. Keene's goal has been to lower the water table to 10 feet below the surface under the seep and hold it there year-round. Keene said, "When a water table is six feet or less below the surface, capillary action and evaporation allows salty groundwater to get pulled up and bring the salts with it. The water evaporates but the salts remain. That is why salty ground gets saltier over time if you don't manage the water table.

Dr. Keene has sampled forage production from the four alfalfa varieties: AFX 457, PGI 427, Rugged and Magnum Salt. "They all seem to have decent salt tolerance,

(Continued next page)

Seep looking west in Sept. 2016, 3 months after planting the alfalfa. (Submitted photo)



Seep looking west in June 2019. The weeds are almost gone and the perennial grasses and alfalfa have filled in. (Submitted photo)

but I do caution that our soil was not extremely salty, to begin with. In terms of hay production, AFX 457 and Rugged were the highest in 2017, PGI 427 and Rugged were the highest in 2018, and in 2019 PGI 427 and Magnum Salt were the highest. We've also sampled the electrical conductivity (EC) in the top 0-3" of the soil each fall. With EC values, the higher the number, the saltier soil is, so lower numbers are good, that is less salty. An EC value less than 2.0 is considered non-saline. From this sampling, we've seen that we've reduced the average EC of our seep from 2.2 dS/m in 2016 to 0.9 dS/m in 2019."

"Seeing that we can flush salts down out of the top three inches in just four years is very exciting. That means that the alfalfa is doing its job lowering the water table, which is allowing the salts to get flushed down with snowmelt and rainfall."

In years to come, Keene will continue monitoring forage production, water table level, and soil EC in 2020. She said, "After that, we're not sure if we'll keep the perennials or go back to annual crops in 2021. We know the annual crops will raise the water table and counteract the good work of the perennials, but we're curious to know how quickly that happens. We will probably leave some of the alfalfa in to help manage the wet slough on the east side of the field. That area is almost always too wet to plant, so leaving it in perennials and not getting the tractor stuck seems like the best plan to me!"

For landowners who deal a lot with saline seeps, Keene suggests growing perennials to manage the water table. "Perennials should be planted on the ground that is contributing to the high water table. This is typically up-slope of the seep. The point is that if you want to stop losing ground to salt, you have to manage more than just the seep itself, you've got to manage the water table that is contributing to the seep. If you don't want to plant alfalfa or salt-tolerant perennial grasses, then look at growing more high water, use cash crops like sunflower, millet, or sorghum-sudangrass as an annual forage. The problem isn't going to get better until you start managing the water table," explained Keene.

To learn more about managing saline seeps and Keene's research, you are welcome to attend the Hard Spring Wheat Show, Williston, ND, on Feb. 13.

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MSU Extension Calls For Pollution Prevention Award Nominations

MSU News Service

BOZEMAN — Montana State University Extension is accepting applications and nominations for the annual EcoStar award, which highlights the efforts of small businesses and organizations that embrace and advance pollution prevention as a key component of their business. The deadline for nominations and applications is March 1.

Pollution prevention is any practice that reduces or eliminates pollution at its source, according to Jenny Grossenbacher, MSU Extension's Montana Pollution Prevention Program coordinator. Reducing the amount of pollution produced means less waste to control, treat or dispose, said Grossenbacher. She added that less pollution means fewer hazards to public health and the environment.

The EcoStar awards, now in their 19th year, recognize Montana small businesses and organizations that are creating more environmentally and economically sustainable communities by reducing solid and hazardous waste, conserving resources such as water, energy and clean air, and serving as role models for the state with their pollution prevention efforts.

Pollution prevention reduces both financial costs, such as those incurred through waste management and cleanup, and environmental costs like health problems and ecosystem damage for individuals and businesses alike, according to Grossenbacher. It protects the environment by conserving natural resources while strengthening economic growth through more efficient production in industry and less need for businesses, households and communities to handle waste, she said.

"We are looking for Montana's business and community leaders that are preserving and prioritizing the health of not only our environment but also our economic resources," Grossenbacher said. "These folks deserve to be honored for their contributions and leadership to the entire region."

According to Grossenbacher, last year's 22 EcoStar award winners represented 18 Montana communities, saved approximately 31 million gallons of water, conserved 179,000 kilowatt hours of energy, reduced 56,000 pounds of hazardous waste and saved $355,172 through their pollution prevention efforts. Gov. Steve Bullock will recognize this year's winners in a ceremony at the Capitol in April.

For more information on the EcoStar award program or to submit an application or nomination, contact Grossenbacher at 406-994-4292 or jenniferg@montana.edu or visit: http://www.mtp2.org/ecostar.html.

MSU Economists Cited In Washington Post Article On Farm Bailout

By Carmen Price, MSU News Service

BOZEMAN – The Washington Post recently cited the work of two Montana State University economists in an article on the federal Market Facilitation Program, commonly known as the farm bailout.

The article, "With Trump's farm bailout came surprising profits, but little help for the neediest," by Andrew Van Dam and Laris Karklis, was published in the business and analysis section of the Dec. 30 newspaper and cites research by associate professor Eric Belasco and professor Vincent Smith of MSU's Department of Agricultural Economics and Economics in the College of Agriculture and College of Letters and Sciences.

Considering 2019's prices, weather and trade war, one could expect the farm sector to be in a rough spot, Belasco states. Yet the U.S. Department of Agriculture estimates that 2019 was farmers' most profitable year in the half decade.

The reason, according to the Post article, is the Market Facilitation Program. Without the bailout, U.S. farm income would have fallen by about $5 billion.

However, while most farmers benefited from the bailout, about half of the $14.5 billion in aid went to the largest 10% of farming operations because the assistance was distributed based on acreage rather than need, according to Belasco and Smith's ongoing research, which is supported by MSU's Initiative for Regulation and Applied Economic Analysis.

In a recent co-authored column referenced in the Post's story, Belasco and Smith write, "most of the payments are going to the biggest and richest farms who already receive the lion's share of federal crop insurance program subsidies and don't need financial help."

"The philosophical question is: Should we have trade aid for farmers who are at low risk of losing their farm?" Belasco said in the story. "Most other safety-net programs are income-adjusted," he added later. "Farm policy doesn't do that at all."

MSU associate professor of economics Eric Belasco.

MSU economics professor Vincent Smith.

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Basics Of Successful Soybean Management In Western North Dakota

NATIONAL HARD SPRING WHEAT SHOW
67th Anniversary

Above: Hans Kandel providing soybean variety information during a plot tour Aug. 26, 2019. (Submitted photo)

By Anna Dragseth

Starting at 2:50 p.m., Dr. Hans Kandel, North Dakota State University Extension agronomist, will be speaking about the basics of successful soybean management in western North Dakota at the Hard Spring Wheat Show, Williston, ND, on Feb. 13.

Dr. Kandel has worked as an extension agronomist in the region since 1995. He received his Master of Science degree from the University of Reading and his Ph.D. from NDSU. Kandel brings international experience to his position from his work with farming communities in developing countries as well as Europe.

Dr. Kandel has been performing research on successful soybean management for a little over 25 years! Recently, he and his students have been working on a statewide study. "We are working on a statewide study where at the end of the growing season, we ask farmers to provide us with their management and yields. We actually had some of our students go to some of the participating farmers to investigate their fields. The objective was to find out which of the management factors had the most likely chance of increasing yields."

Through Kandel's research, he has found that many factors contribute to successful soybean management, such as variety selection and adaptation, correct row spacing, planting date, and the proper use of inoculants.

Soybean variety selection should be based on maturity, seed quality, disease reaction, yield, and iron-deficiency chlorosis tolerance. Kandel explained that lat-

(Continued on page 30)

Soybean variety testing on farm July 15, 2019. (Submitted photo)

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Successful Soybean...

(Continued from page 28)

er-maturing varieties tend to yield more than early-maturing varieties. "Although late-maturity increases yield potential, these varieties will have more risk than earlier-maturing varieties," said Kandel. For example, an early fall frost could damage or kill a late-maturing variety before the beans have completely filled in the pods-which would result in decreased yield and quality of the crop.

Row spacing is also crucial for improving soybean yield. Kandel's research has proven that higher yields of soybean can be achieved in rows less than 30-inch spacing. NDSU research indicates that 14-22-inch rows out yield wider-spaced (28-30-inch) soybeans by an average of 4% when averaged across 24 trials.

Soybean seeding rate and planting date are also important factors to consider. Planting soybeans after the soil has warmed up to 50° F is favorable because soybeans are susceptible to frost and near-freezing conditions in the early spring and late fall. Planting early in cold/wet soil can result in low germination and an increased chance of seedling diseases. Planting during the first part of May is usually best because it reduces the chance of frost injury.

Using inoculants correctly can help increase yields significantly. When planting in a new area, soybean seeds should be inoculated with bradyrhizobium japonicum (soybean inoculum). Three inoculum types can be used: peat-based, liquid-based, or granular.

Granular tends to be the easiest for growers to work with. When using peat-based and liquid-based treatments, all seeds should have inoculum attached to it when it enters the soil. Peat-based inoculants can wear off the seeds if they are not applied with the appropriate amount of sticking agent. Application of liquids could be poorly calibrated, which may cause the inoculum to miss some of the seeds. Even granular can pose problems if the seeder is poorly calibrated. Kandel explained, "It is

(Continued on next page)

Harvesting soybean variety plot Oct. 28, 2019. (Submitted photo)

On farm soybean variety plots just before harvest Sept. 26, 2019. (Submitted photo)

(Continued from previous page)

especially crucial for farmers in the western part of the state to inoculate soybeans when planting in new soil; otherwise, there will be no biological fixation of nitrogen."

If growers use proper care during handling and application, the success rate of inoculation is very high. If nodulation does not take place, more nitrogen will have to be applied to reach yield potential.

When Kandel was asked if there is anything new he would be implementing into his current research, he said, "We are looking at fertility issues and different types of inoculants. We keep on refining our management strategies as farmers are asking us questions."

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