

BLIZZARD WATCH



From the Department Head

Dr. Richard Horsley



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The name of the department's newsletter, *Blizzard Watch*, certainly reflects the winter we had and one that just doesn't seem to want to go away. The university closed four times so far this year due to weather and we had more than 70 days in a row where the temperature did not get above freezing. My barley breeding project was hoping to begin seeding in Williston and our other western research sites following Easter, but given the weather we are receiving in mid-April, we'll have to see.

This year's *Blizzard Watch* is one of the longest ever because of the long list of awards and accomplishments by our students, staff, and faculty. I am especially touched by the community outreach and service provided by our students, faculty, and staff. Each year the *Blizzard Watch* provides stories on our new hires and those that have left. In December 2018, Dr. Rod Lym retired after a 39-year career as a faculty member that focused on control of perennial weeds. Dr. Lym's research to control leafy spurge and other weeds using an integrated approach is memorable.

This year we were able to refill two faculty positions. Dr. Joe Ikley began in late December 2018 as the Extension

weed scientist and Dr. Nonoy Bandillo began in late January 2019 as the pulse breeder. In July 2018, we had one faculty promotion. Dr. Senay Simsek, leader of the wheat quality program, was promoted to professor. Dr. Simsek is also the Bert L. D'Appollonia Cereal Science and Technology of Wheat Endowed Professor. In 2018, we also experienced times of sadness following the passing of Gonzalo Rojas-Cifuentes, Bryce Farnsworth, and Rachel Olson.

An exciting proposal in this year's North Dakota legislative session for our department and NDSU is a Senate Bill that would provide funding to build the Agricultural Product Development Center (APDC) on the NDSU campus. The APDC would include research and teaching space utilized by our Cereal and Food Sciences programs in Harris Hall and the Quentin Burdick Building and the Animal Sciences Meat Science program in Shepperd Arena. The work done by our faculty, staff, and students in Harris Hall on wheat, barley, durum, and pulses is critical to the state's economy. For example, over 50% of the wheat and durum produced in the state is exported outside the country. Each year around harvest, multiple trade teams

made up of potential buyers of our state's wheat and durum visit Harris Hall to view the crop that is being evaluated in the annual crop survey. Having them in a building that has been referred to by visitors as a "working museum" is not an impression we want them to leave with. Facilities in the proposed APDC that we currently do not have at NDSU include a sensory lab and food-grade research and teaching laboratories. The APDC also would include expanded research space for our cereals, pulse, and oilseed quality programs and our food ingredient programs.

Total student numbers at NDSU dropped in fall 2018 to around 13,800. A portion of this reduced enrollment is due to the reduced number of credits required for students to earn an undergraduate degree. The reduction from 128 to 120 credits allowed many students to graduate one semester earlier. In fall 2018, in our undergraduate majors, we had 196 students in Crop and Weed Sciences, 25 students in Food Science, and 37 students in Horticulture. We had three

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Faculty and Staff Updates

New Faculty

Dr. Joe Ikley joined NDSU in December 2018 as an assistant professor and Extension weed specialist. He is a native of Maryland and earned his B.S. in agricultural sciences and technology and his M.S. in plant sciences from the University of Maryland. He earned his Ph.D. in weed science from Purdue University.



Ikley worked the last two years in Extension Weed Science at Purdue and conducted research on difficult-to-control weeds including glyphosate-resistant Palmer amaranth, waterhemp, and horseweed.

At NDSU, Ikley will focus on providing Extension material for identification and control of new and emerging weeds in North Dakota. His research will focus on control of herbicide-resistant and other difficult-to-control weeds in row crops in North Dakota.

Dr. Nonoy Bandillo joined NDSU in January 2019 as an assistant professor and pulse crop breeder.



Prior to joining NDSU, he was a research assistant professor at the University of Nebraska-Lincoln in soybean breeding and quantitative genetics, and a postdoctoral research associate and visiting scientist at the Buckler Lab at Cornell University in maize and sorghum quantitative genetics. He received his Ph.D. in plant breeding and genetics at the University of Nebraska-Lincoln.

One of Bandillo's goals for the NDSU pulse breeding and genetics program is to genotype the pulse breeding progenies with inexpensive, high-density DNA markers and evaluate that information for making selection decisions.

Faculty Promotion

Dr. Senay Simsek was promoted to professor July 1, 2018. Simsek earned her Ph.D. in food science at Purdue University. She was hired at NDSU as an assistant professor in the Department of Plant Sciences in 2007 and in 2013 was named the Bert L. D'Appolonia Cereal Science and Technology of Wheat Endowed Associate Professor. Simsek leads the wheat quality program.



New Staff and Updates

New postdoctoral research fellows are **Kristin Simons**, dry bean breeding with Dr. Osorno; **Guojia Ma**, sunflower genetics at Northern Crops Science Lab with Dr. Qi; and **Leqi Cui**, food chemistry with Dr. Rao. **Sepehr Naraghi** transferred from wheat genetics to oat breeding with Dr. McMullen.

New research staff are **Evan Salsman**, assistant durum breeder with Dr. Elias; **Alexa Lystad**, research specialist in sugarbeet weed control with Dr. Peters; and **Kristin Boll**, research specialist in weed biology and ecology with Dr. Gramig. **Megan Hest**, food technologist technician, **Gwen Thomas**, food tech-

nologist, and **Nathan Haugrud**, research specialist, joined the wheat quality lab with Dr. Simsek. **Wei Zhang** moved from postdoctoral researcher to research specialist in wheat genetics with Dr. Cai. **Brian Cattanach**, research specialist in barley breeding with Dr. Horsley, began in January 2019.

Joyana Baumann was promoted from research specialist to assistant director of North Dakota Foundation Seedstocks in January 2019.

Krista Caldwell was hired as senior accounting specialist in the main office.

Staff Resignations

Postdoctoral research fellows who resigned are **Meriem Aoun**, durum breeding; **Zhou Liu**, sunflower genetics; **Mitch Bauske**, Extension potato production; and **John Stenger**, high value crops.

Research staff who resigned are **Jason Adams**, Extension weed control; **Jason Fiedler**, bioinformatics; **Martin Hochhalter**; barley breeding; **Rachel McArthur**, wheat genetics; and **Kaitlin Beck**, **Chris Cossette** and **Karen Jensen**, wheat quality.

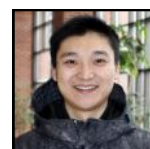
In the main office, accounting specialist **Star Theis** also resigned.



Simons



Ma



Cui



Naraghi



Salsman



Lystad



Boll



Hest



Thomas



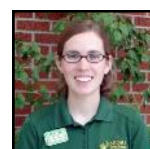
Haugrud



Zhang



Cattanach



Baumann



Caldwell

Dr. Rodney Lym Retirement

By Kamie Beeson

What began for Rodney Lym in 1979 as a two-year postdoctoral research fellow appointment in the leafy spurge control program grew into a successful 39-year career as a North Dakota State University weed scientist.

Lym's post-secondary education began at the United States Military Academy at West Point, New York. He then attended the University of Wyoming at Laramie, where he earned a B.S. in microbiology and a Ph.D. in agronomy with weed science specialty.

Following his postdoctoral position at NDSU, in 1981 Lym was made an assistant professor in weed science research. He achieved the rank of professor in 1993. Additionally, he served at various times in the Department of Plant Sciences as the assistant or associate chair and took on a short stint as acting chair in 2008. He also served two years (2005-07) as interim chair of the Department of Soil Science.

Lym was hired on at NDSU during the leafy spurge crisis in North Dakota. Leafy spurge acreage in the state was doubling every 10 years and reached a peak of about 1.8 million acres in the mid-1990's. Lym joined a research team assembled by then dean of the College of Agriculture, H. Roald Lund, and led by weed scientist Cal Messersmith, to address the rapid spread of leafy spurge in the state.

When their work began, there were only three herbicides used for leafy spurge control, Banvel, Tordon and 2,4-D, which were too expensive or not effective. Now, Lym reports, there are over 16 herbicide treatments available for leafy spurge control in a variety of environments. In addition to herbicides, 11 biocontrol methods have been introduced, with the *Aphthona* flea beetles being the most successful. Today, the acreage affected by leafy spurge has been cut to 750,000 acres and the infes-

tation continues to decline. "Leafy spurge is no longer the most feared or costly weed in the state," says Lym. "I was very fortunate to be part of this successful program."

"Rod's career in conducting research to control leafy spurge and other perennial weeds led to effective methods to reduce the acreage infested with these weeds in North Dakota. This body of work will be long remembered as a success story in combatting invasive weeds," said Richard Horsley, head of the Department of Plant Sciences.

Lym also conducted weed control research for other troublesome weeds including purple loosestrife, spotted knapweed and Canada thistle. His research covered methods from herbicide applications to grazing with goats, integrated pest management with fire and reseeding, and biological control agents.

Lym's research led to numerous publications. He wrote and saw published 117 peer reviewed journal articles, over 200 Western Society of Weed Science Research Progress Reports, several book chapters, and presented over 160 abstracts and papers at international, national, and regional scientific society meetings. He is the author or co-author of 21 Extension circulars, most notably, *Identification and Control of Invasive and Troublesome Weeds in North Dakota* and *A Guide to North Dakota Noxious and Troublesome Weeds*. They have a combined 52,000 copies printed to date. He is most proud of co-authoring *The Thistles of North Dakota* with Department of Plant Sciences research specialist Kathy Christianson, because they had to locate and photograph the thistles. "Just finding some of the native thistle species was a challenge," says Lym.

Lym has been a member of and served in a variety of roles in professional associations. He was the 2012-13 presi-

dent of the Weed Science Society of America and a member of the Herbicide Handbook Committee from 1982-89, serving as the associate editor for the publication's 7th Edition. He was the 1998-99 president of the Western Society of Weed Science (WSWS) and editor for the WSWS Proceedings from 1989-97. He was the 1986-1987 Executive Committee chair of the Great Plains Agricultural Council, and served on the Board of Directors for the Council for Agricultural Science and Technology. He also was involved in the North Central Weed Science Society and the Society for Range Management.

Throughout his career, Lym received many honors, awards and recognitions for his research and publications. Notable honors include Weed Control Partner Award, North Dakota Department of Agriculture (2018); Lifetime Achievement Award, North Dakota Weed Control Association (2018); Fellow, Weed Science Society of America (2006); and Fellow, Western Society of Weed Science (2000).

In addition to his research, Lym taught the Laboratory Methods in Weed Science course and mentored 18 master's and two doctoral degree students through their graduate studies. He viewed his work with and training of graduate students as his number one priority.

Lym retired December 31, 2018. In retirement, he plans to enjoy more time pursuing his interests including gardening, model trains, and training for running races, and he would like to vacation in the South. We wish Dr. Rod Lym a long and enjoyable retirement!



Faculty and Staff Awards and Honors

Lym Honored for Weed Control Work



Rod Lym accepted two awards for his work with the North Dakota Department of Agriculture (NDDA) and the North Dakota Weed Control Association (NDWCA) during annual weed meetings in Bismarck, ND.

NDDA Commissioner Doug Goehring presented Lym with the 2018 Weed Control Partner Award. The award honors outstanding invasive weed control efforts in the state. Goehring said, "Dr. Lym has been a valuable resource for the latest research and information on noxious and invasive weeds and I thank him for his efforts."

Lym also received the Lifetime Achievement Award from the NDWCA. This is the "Hall of Fame" award of the NDWCA and is for individuals who have provided key help and support to the NDWCA.

Lym has been active with the NDDA and the NDWCA for more than 35 years. In 1981, the North Dakota Legislature revised the North Dakota Noxious Weed Law, which authorized county commissioners and township boards to appropriate funds to create weed control boards in each North Dakota county. At that time, Lym began assisting and advising agriculture commissioners, legislators and county officials to organize the NDWCA and has continued that role ever since.

Potato Researchers Receive Visitors Bureau Award

The Fargo-Moorhead Convention and Visitors Bureau (FMCVB) recognized the organizers of the 101st Potato Association of America (PAA) meeting with the Industry Excellence Award.

The award is given to "the individual or organization that has made a significant effort to bring a major convention, con-

ference, meeting or special event to Fargo-Moorhead-West Fargo during the last year."

The PAA Local Arrangements Committee was chaired by **Andrew Robinson**,



From left: Robinson, Secor, Thompson

Gary Secor and **Asunta Thompson**, and included 13 more people from NDSU, the University of Minnesota, the USDA/ARS Red River Valley Research Center, potato industries, and the Northern Plains Potato Growers Association. More than 250 researchers attended the meeting.

Robinson is the NDSU potato production Extension agronomist; Secor leads the potato and sugarbeet disease project in the Department of Plant Pathology; and Thompson leads the potato breeding project.

Ransom Receives Durum Growers Award

Joel Ransom received the 2018 United States Durum Growers Association Amber Award in November at the Crop Outlook and International Durum Forum in Minot. Shana Forster, director of the NDSU North Central Research Extension Center, who nominated Ransom for the award, said, "Dr. Ransom has positively impacted the durum wheat growers of North Dakota through his applied research program and Extension publications and presentations. Dr. Ransom is well deserving of the accolades recognizing his significant contributions made to durum wheat."



The Amber Award is given annually to an individual who has contributed significantly to the durum industry and producers.

Berti Named Researcher of the Month

Marisol Berti was awarded the November Researcher of the Month Award by the NDSU Office of Research and Creative Activity (RCA). She is the third NDSU researcher to receive the award. Berti said she was surprised and honored to be recognized for her research and teaching activities.



According to the RCA office, the Researcher of the Month award was created to recognize NDSU researchers who deliberately seek excellence in research, are strong leaders and highly effective teachers who strengthen the productivity and research reputation of the entire university.

Thompson Named Potato Industry All-Star

Asunta Thompson was among 11 women named in "The Potato Industry's All-Star Team" article in the May/June 2018 *Spudman Magazine* Women of the Industry issue. The article features some of the leading researchers, breeders and growers from across the U.S. and Canada.



Deckard Honored during NDSU Ag Week

Awards were presented to students and faculty by the NDSU Agriculture Collective during the third annual NDSU AgWeek in April.

Ed Deckard received the Open Door Award, which recognizes faculty who are always available to talk to and help students. The award criteria states that the recipient "exemplifies agriculture by always being there for your neighbor."



Faculty and Staff Awards and Honors

Agriculture and Extension Personnel Honored

Horticulture professor **Todd West** received the William J. and Angelyn A. Austin Excellence in Advising Award at the 2018 Agriculture and Extension Faculty/Staff Awards program. This award recognizes the contributions of faculty and staff who have demonstrated excellence in advising students enrolled in the College of Agriculture, Food Systems, and Natural Resources and/or its student organizations.



West

Six others from the Department of Plant Sciences were nominated for awards, including grant coordinator **Cora Crane** for the Rick and Jody Burgum Staff Award; professor **Burton Johnson** for the H. Roald and Janet Lund Excellence in Teaching Award; Extension horticulturist **Esther McGinnis** for the Excellence in Early Extension Career Award; accountant **Lorin Miller** for the Charles and Linda Moses Staff Award; assistant professor of practice **Rebekah Oliver** for the Earl and Dorothy Foster Excellence in Teaching Award; and assistant professor **Mukhlesur Rahman** for the Larson/Yaggie Excellence in Research Award.



From left: Oliver, Johnson, Crane, Miller, McGinnis, West (Rahman not pictured)

The annual awards program recognizes excellence in research, teaching, Extension and support staff in the College of Agriculture, Food Systems and Natural Resources, the North Dakota Agricultural Experiment Station, and NDSU Extension.

Extension Employees Honored

NDSU Extension faculty and staff were honored for their years of service during the Extension/Research Extension Center fall conference. **Esther McGinnis**, horticulture specialist, was recognized for five years of service. **Tom Kalb**, horticulture specialist, and **Chad Deplazes**, research specialist, were recognized for 10 years of service.



McGinnis



Kalb



Deplazes



Peters

Extension sugarbeet production and weed specialist **Tom Peters** was part of a large team of Extension specialists, agents, and outside collaborators, who were recognized with a team award for their work on a Palmer amaranth weed control program. The program, "Palmer Amaranth Weed Watch: From Bus Tour to Raising Awareness in North Dakota", focuses on understanding how to identify and manage Palmer amaranth and raising awareness of the weed's potential economic impact to North Dakota.

Staff Years of Service

5 Years

Jason Axtman
Cora Crane
Chad Deplazes
Jerry Gee
Greg Morgenson

10 Years

Kevin Rue

20 Years

Paula Petersen

35 Years

Kathy Christianson



Justin Hegstad



Janet Davidson-Harrington



Frank Manthey

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Department News

Sustainable Foods Plot Tour

In August, Department of Plant Sciences researchers showcased six acres of research plot land on the Fargo campus that is being transitioned so it can be certified organic. Crops at the research site include spring wheat, durum wheat, oat, barley, potato, spelt, einkorn, emmer, pea and buckwheat. Tour participants also toured the NDSU barley, wheat and durum quality laboratories and the Northern Crops Institute.



Horticulture Research Farm Field Day

Department of Plant Sciences faculty, staff and graduate students hosted a tour of the Dale E. Herman Research Arboretum and Horticulture Farm in August. Researchers showcased horticulture, high value crop, sustainable weed control and woody plants research.



Plants, Local Foods & Outdoor Spaces

Department of Plant Sciences faculty, staff and students hosted the Plants, Local Foods, and Outdoor Spaces event at the NDSU Horticulture Research and Demonstration Gardens in September. Activities included tours of the gardens, tractor trailer tour of fruit and vegetable research, sampling historic

tomato varieties, and learning about potato research. Free houseplants for NDSU students were provided by the NDSU Horticulture and Forestry Club. In addition, food donations were collected for the local food bank.



Dangerous Weed Reaches North Dakota

Palmer amaranth, the No. 1 weed problem in the United States, was confirmed in five North Dakota counties by the end of the 2018 growing season. Existence of the weed in North Dakota is alarming, as it has devastated crops in the South and Midwest in recent years. Palmer amaranth is an aggressive, hard-to-control type of pigweed that can grow 2 to 3 inches per day in optimum conditions and reach a height of 6 to 8 feet. A single plant can produce up to 1 million seeds. Control is a challenge, because Palmer amaranth can emerge throughout the growing season and is prone to herbicide resistance.



The discovery of Palmer amaranth in North Dakota has kept NDSU Extension weed specialists busy fielding calls, giving interviews, and educating the public. NDSU Extension weed specialist Joe Ikley gave a historical review of Palmer amaranth during the January 2019 Wild World of Weeds Workshop. NDSU Extension sugarbeet agronomist and weed specialist Tom

Peters says the first step to managing the weed is to look for it and correctly identify it. Next, the plants must be removed and fields monitored for seed beds. He also says applying herbicides before the weed emerges is more effective than trying to control it with herbicides after it has started growing.

Anyone who sees a plant that may be Palmer amaranth should contact a local NDSU Extension agent as soon as possible. Find your local agent at www.ag.ndsu.edu/extension/directory.

Learn more about Palmer amaranth and how to identify it at www.ag.ndsu.edu/palmeramaranth.

Sustainable Agriculture & Renewable Energies Study Abroad Course

Marisol Berti led her fourth "Sustainable Agriculture and Renewable Energies in Europe" study abroad trip during summer 2018. Forty students have traveled with her since 2013 and she has added new learning experiences to the trip each year. In 2018 the group stopped in more than a dozen cities in seven countries in 19 days.

New tour stops included a poppy seed production research facility in Austria; a family owned organic farm and winery in Vienna; Monsanto cucumber breeding program research facilities near Amsterdam; and the Swedish University of Agricultural Sciences in Stockholm, which specializes in sustainable agriculture research and cropping systems ecology.



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Department News

(Continued from page 6)

Other stops included Venice, Italy; the University of Bologna; the Gussing European Center for Renewable Energies near Graz, Austria; the Sonnenrde composting and biochar plant in Riedlingsdorf; the University of Vienna (BOKU); the ice caves near Salzburg; the University of Hohenheim near Stuttgart; the Kastrup Experimental Station at the University of Copenhagen in Denmark; and Helsinki, Finland.



Berti says she believes study abroad is a very valuable experience and works to show the students “what tourists don’t see.” Berti says it is life changing for many students and makes them more employable in international agriculture industries.

Students must attend six hours of classroom teaching and prepare academically before the trip.

Product Development Class Partners with Industry

Students in the CFS 480/680 Food Product Development class were tasked with developing a blue cornmeal based food product for their final project, including production and marketing plans, much like a commercial product development team. Dr. Jiajia Rao teaches the spring semester course and says, “This is a great opportunity for students to get involved in teamwork, creativity, and scientific skills.”

Rao previously worked in the food production industry and realizes the importance of connecting students with industry representatives. Therefore, she approached companies to sponsor the product development activity.

Richland Innovative Food Crops, Inc., located in Breckenridge, MN, sells

soybeans and blue corn for processing into specialty food products. They offered to provide funds for the class project when Rao told them about it.

The class products were “Blue Cranberry Breakfast Bars” by Hanna Gross, Madison Gohl and Jonathan Roe; “KT Lemon Cream Cookies” by Karlee Box, Kelsey Pladson, Trevor Austin and Tyler Bjork; and “Purple Thunder Corn Flakes” by Ben Klesk, David Syverson, Christian Akers and Annie Baja.

Richland IFC, Inc. president Rick Brandenburger, ingredient sales and product manager Dominique Schuler and product development and quality assurance manager Dr. Mihiri Mendis attended the presentations.



CFS 480/680 Product Development Class



From left: KT Lemon Cream Cookie, Blue Thunder Corn Flakes, Blue Cranberry Bars



From left: Brandenburger, Mendis, Schuler

Research Grants

Plant Sciences researchers actively pursue grants for research funding and support. A snapshot of grant awards in 2018 is listed below.

- ◆ Over \$7.1 million in grants were awarded
- ◆ 169 grants from \$740 to \$589,700 were awarded to 34 researchers

The three largest grants awarded were:

- ◆ *Development of Hard White Specialty Spring Wheat Breeding Program*
Project Leader: Dr. Andrew Green
Funded by: Ardent Mills
Amount: \$589,700
- ◆ *Development, and Postharvest Treatments for Improved Quality of Cold-Hardy Interspecific Grape Crosses*
Project Leader: Dr. Harlene Hatterman-Valenti
Funded by: ND Dept of Ag Specialty Crop Block Grant
Amount: \$226,426

Information provided by Cora Crane, grants coordinator.

- ◆ *Breeding of Non-GMO Cultivars and Germplasm*
Project Leader: Dr. Ted Helms
Funded by: ND Soybean Council
Amount: \$225,697

The five agencies granting the most funds were:

- ◆ USDA/ARS-USWBSI: 10 grants; \$1,008,401
- ◆ USDA/AMS-ND Dept. of Ag/ND Specialty Crop Block Grant: 8 grants; \$812,381
- ◆ ND Wheat Commission: 19 grants; \$768,280
- ◆ Ardent Mills: 1 grant; \$589,700
- ◆ ND Soybean Council: 7 grants; \$518,903



Variety Releases and Woody Plant Introduction

The North Dakota Agricultural Experiment Station released new crop varieties ND18008GT soybean and ND Hammond flax in 2018. ND18008GT soybean, ND Eagle lentil (2016), ND Grano durum (2017) and ND Riveland durum (2017) were distributed for the first time by the North Dakota County Seed Increase Program in the spring of 2018. ND Hammond flax will be distributed in the spring of 2019.

For further information regarding foundation or registered seed availability of these or other varieties, contact a county agent of NDSU Extension, an NDSU Research Extension Center, the North Dakota Crop Improvement and Seed Association, or the North Dakota Foundation Seedstocks Program.

In addition, Fireflare Orange™ Mollis Azalea, a new woody plant selection, was introduced by the North Dakota Agricultural Experiment Station and the North Dakota State University Research Foundation in January 2019.

ND18008GT Soybean

Breeder: Ted Helms, soybean breeding program



ND18008GT is a glyphosate resistant soybean variety with relative maturity 00.8, which makes it a good fit for the northern areas of North Dakota. It is tolerant to soybean aphid and resistant to race 4 of phytophthora root rot. This variety is sensitive to metribuzin herbicide. It has purple flower color, tawny pubescence, brown pods, dull seed coat luster and black hila.

To ensure genetic purity, this variety is protected under Plant Variety Protection Title V and must be sold as a class of certified seed. The North Dakota Crop Improvement and Seed Association has rights to production and distribution of seed.

ND18008GT contains a proprietary trait that is patented with a certified seed only (CSO) clause. Only certified seed is permissible for planting. Seed may not be saved for the purpose of replanting.

ND Hammond Flax

Developed by: James Hammond, Jerry Miller, Mukhlesur Rahman, flax breeding program



ND Hammond is a brown seeded flax variety that is adapted to the north central flax growing region of the United States. It has high yield potential and medium maturity. This variety has good oil drying quality and resistance to flax wilt. ND Hammond was named in honor of longtime NDSU flax breeder Dr. James Hammond, who made significant contributions to flax research.

To ensure genetic purity, this variety is protected under Plant Variety Protection Title V and must be sold as a class of certified seed. The North Dakota Crop Improvement and Seed Association has rights to production and distribution of seed.

Fireflare Orange™ Mollis Azalea

Rhododendron x kosteranum 'FireDak'

Developed by: Dale Herman, Todd West, woody plant improvement program



Fireflare Orange™ is a compact shrub, which grows to a size of 4' x 5'. It has lavishly brilliant fire-orange spring flower clusters with 3-7 florets per bud. It also has very nice yellow-orange to reddish-purple fall leaf coloration.

This selection prefers full sun to part shade. It is pH tolerant with no exhibition of chlorosis symptoms typical of other cultivars of this species.

This deciduous azalea is a great winter hardy addition to the northern landscape.

Information provided by Joyana Baumann, ND Foundation Seedstocks, and Todd West, NDSU Woody Plant Improvement Project.



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Dry Edible Bean Research Program Profile

By Karen Hertsgaard

Dry edible beans are an important crop because they supply important nutrition, improve soil quality and fertility through nitrogen fixation, and are a valuable cash crop for large and small-holder farmers worldwide.

North Dakota leads the U.S. in dry edible bean production with as much as 39% of United States production (<https://quickstats.nass.usda.gov/>). According to grower surveys and the United States Department of Agriculture/National Agriculture Statistics Service, North Dakota State University varieties account for almost 25% of the MN-DAK area planted pinto bean, 90% of planted black bean and 10% of planted navy bean acreage. Assuming average yields and prices, NDSU varieties likely contribute more than \$90 million per year to the state's economy and return approximately \$375 for every dollar invested in the dry bean breeding program.

The history of the dry edible bean program in North Dakota is short compared to that of the entire U.S. Dry edible beans were grown in the U.S. since the late 1900's and the first dedicated



Ken Grafton,
NDSU's first dry
bean breeder

U.S. dry bean breeding program started in 1906 at Michigan State University. However, the first NDSU dry edible bean breeder, Ken Grafton, was not hired until 1980. When Grafton became director of the ND Agricultural Experiment Station and dean of the College of Agriculture, Food Science and Natural Resources in 2007, Juan Osorno was hired for the dry bean breeding position. State dry bean acreage has increased from 200 thousand acres in 1962 to 675 thousand acres in 2016 (<https://quickstats.nass.usda.gov/>).

Osorno works with eight market classes of dry edible beans: pinto, navy, black,

dark red and light red kidneys, great northern, small reds and pinks. NDSU has released 17 varieties since 1981.

Osorno also works closely with Phil McClean, director of the genomics and bioinformatics program, who joined NDSU in 1985.



McClean (left) and Osorno

McClean and Osorno were instrumental in sequencing the common bean genome, and now work to utilize the mapped genome to improve common bean varieties worldwide. Their research efforts across the U.S. and the world include leading two large programs to identify and utilize genetic markers to breed improved dry edible bean varieties.

From 2009 to 2014, McClean and Osorno led the USDA/National Institute of Food and Agriculture (USDA/NIFA) funded Common Bean Coordinated Agriculture Project (CAP), which included researchers from six U.S. universities, including NDSU, and five USDA research facilities. They identified nearly 130,000 genetic markers, created outreach materials on the benefits of beans in a healthy diet, and recruited high school and undergraduate students to explore degrees in plant breeding.

McClean and Osorno were primary investigators in two United States Global Hunger and Food Security Initiative projects and the U.S. Agency for International Development (USAID) Legume Innovation Lab (LIL) program from 2013 to 2017. The key goals of the LIL research programs are to improve nutrition worldwide, especially in poor and undernourished countries, by increasing productivity of dry beans through research; to develop grain sys-

tems and value chains to benefit small-holder farms; and to improve dry bean research outcomes at agricultural universities in developing countries.

The first LIL project for McClean and Osorno was led by the University of Puerto Rico, titled *Development and implementation of robust molecular markers and genetic improvement of common and tepary beans to increase grain legume production in Central America and Haiti*. They were international collaborating scientists for the project and worked to improve bean cultivars in Central America and the Caribbean through increased disease and pest resistance, and tolerance to low soil fertility.

Another LIL project, *Genetic improvement of Middle-American climbing beans for Guatemala*, was led by NDSU, with Osorno as lead project investigator and McClean as a collaborating U.S. scientist. The goal of this project was to discover genetic diversity in climbing beans in the highlands of Guatemala by identifying genomic regions associated with important traits such as disease resistance and improved agronomic characteristics.



LIL project in Guatemala

In addition to their research, Osorno and McClean teach courses at NDSU. Osorno teaches PLSC 315 Genetics and PLSC 790 Graduate Seminar. McClean teaches PLSC 411/611 Genomics, PLSC 721 Genomics Techniques and PLSC 731 Plant Molecular Genetics.

(Continued on page 10)

Dry Edible Bean Research (continued)

(Continued from page 9)

The NDSU dry edible bean project personnel are research specialists Jody VanderWal and John Posch, postdoctoral research fellow Kristin Simons, and graduate students.

The NDSU genomics and bioinformatics program includes research specialist Rian Lee, postdoctoral research fellow Atena Oladzad Abbasabadi, and graduate students.

Since 2014, researchers and students in the dry edible bean and genomics and bioinformatics projects have received eight distinguished research awards from state, national and international groups. In addition, at least one student working with Osorno completes a master's or doctoral degree every year and goes on to continue important plant breeding and genomic research worldwide.



Dry bean breeding and genetics group (left to right): Lee, Oladzad Abbasabadi, McClean, Osorno, Simons

From the Department Head (continued)

(Continued from page 1)

students in the Horticulture M.S. program, 27 students in the Cereal Science M.S. and Ph.D. programs, and 71 students in the Plant Sciences M.S. and Ph.D. programs.

To make sure you keep up with the latest news and photos, you can access

our web page at www.ag.ndsu.edu/plantsciences, our Facebook page at **NDSU Plant Sciences**, or follow us on Twitter at **@NDSUPlantSci**. If you would like to read previous *Blizzard Watch* editions, you can access the archive at www.ag.ndsu.edu/plantsciences/news/

newsletter. If you are an alumnus, please visit our alumni page at www.ag.ndsu.edu/plantsciences/alumni to tell us about your current position and how your experience at NDSU contributed to where you are today.

Alumni Spotlight



Chris Branson

Degree: M.S. in Agronomy with emphasis in Plant Breeding and Statistics

Year Graduated: 1984

Advisor: James Hammond

Current Position: Retired, 2017

Before retiring I spent 30 years in Canberra working for the CSIRO (Australia's federal science agency) and for a number of Commonwealth Government departments and agencies. My work has varied significantly over the 30 years. Initially, I worked as a plant breeder, but eventually became involved in research commercialisation, intellectual property matters, science policy, food safety and finally, in regulation policy and programs. I have provided science, agriculture, biotechnol-

ogy and biosecurity policy advice to a number of Commonwealth Ministers and to an Australian Prime Minister. Later in my career, as a senior executive, I changed direction and became responsible for federal government programs designed to promote the uptake of large and small scale renewable energy and to better manage carbon in agricultural systems and, hence, to reduce Australia's greenhouse gas emissions.

How has your NDSU experience contributed to where you are today?

My experience and the skills I learned at NDSU provided me with a solid foundation upon which to build my career. The skills you learn as a researcher and the inquiring mind you develop can be applied in so many ways, from the everyday

through to other types of analysis and research. I have always felt confident to tackle whatever was thrown at me, drawing on my experience as a graduate student and researcher at NDSU. Having travelled to NDSU from the other side of the world and arriving in a country where I initially knew no one, my NDSU experience also taught me to be resilient and not fear change. So many times in my life when I have had to make large scale change, I have thought back to my NDSU days and took comfort in knowing that I have done it before and I can do it again. I shall forever owe a great deal to my academic advisor at NDSU, the late Dr. James J. Hammond, and to my colleague Lyle Lindberg.

Outreach and Service

Zuk Recognized for Service on behalf of University

By Karen Hertsgaard and Kamie Beeson

Meeting a Need

In January 2018, Department of Plant Sciences associate professor Alan Zuk and alumnus James Steinberger combined efforts to deliver a large supply of dry edible beans to the St. Francis Mission on the Rosebud Indian Reservation in South Dakota. The beans, which included navy, pinto, red, black, pink, light red kidney, dark red kidney and great northern, were produced and harvested as part of Juan Osorno's dry edible bean breeding research.

St. Francis Mission President Father James Kubicki and Chief Operating Officer Rodney Bordeaux helped coordinate the delivery of more than 6,500 pounds of beans.



From left: Kubicki, Bordeaux, Zuk, Steinberger

Bordeaux said the beans would be distributed through Tribal Social Services, which has an efficient distribution network throughout the four counties in the reservation area. He said that more than 25,000 people in 20 different communities in the reservation would benefit from the large donation.

Zuk said, "The produce and beans are available every year after research is completed and I am happy to make deliveries to those in need."



Unloading beans at St. Francis Mission

Star Quilt Honor

Bordeaux and Kubicki praised Zuk and Steinberger for their efforts and presented Zuk with an honorary Lakota Star Quilt after unloading the beans.



Kubicki and Bordeaux present Zuk with the Star Quilt

The Rosebud Sioux Tribe is a branch of the Lakota Sioux Indian nation. The Lakota people are well-known for creating and giving Star Quilts. The Morning Star pattern is an important symbol to the Lakota, symbolizing new beginnings or a new dawn¹. Star Quilts are one of the most important gifts a Lakota member can give and demonstrate honor and respect for the recipient. It is the giver's wish that the recipient be "blessed with this simple covering of good thoughts and best wishes."²



The Star Quilt presented to Zuk was handmade by women from the Rosebud Sioux Tribe. Individual women piece together and sew the quilt tops. They carefully choose the colors for each of their designs; yellow, red and orange, as found in the quilt Zuk received, represent the sun¹. Once the quilt top is assembled, a group of women gather to put together the quilt top, batting and quilt back, hand sewing the three layers. More than a dozen women in the tribe work together and are teaching younger women the art.

Zuk was surprised by the gift and said he accepted the quilt on behalf of all the individuals from NDSU who were involved in the project – Osorno, who grew and harvested the beans with his team; staff member Tom Walk, who helped load the beans onto the truck; and Steinberger, who helped coordinate and deliver the beans.

A Quilt for the Community

In December, Zuk shared the Lakota Star Quilt with the NDSU community by donating it to the Emily P. Reynolds Historic Costume Collection (ERHCC) at the NDSU Department of Apparel, Design and Hospitality Management.

The ERHCC was established during the career of Emily Reynolds, long time faculty member and department chair of the Department of Textiles and Clothing (now the Department of Apparel, Design and Hospitality Management), and was named in her honor in 1984. Originally established as a repository for historic costumes to be used for study by graduate students, the collection also includes other types of textiles including quilts and textile related items. There are now more than 5,000 items in the collection. The purpose of the collection is to provide a historic record of life through preservation of these items.

Susan Clark, the current manager of the collection, said, "The collections committee was thrilled to accept Alan's offer to donate the Lakota Star Quilt to the ERHCC. It is the only modern piece of Native American textiles that we will have and will be a welcome addition to our permanent collection!"



Clark (left) accepts the Star Quilt from Zuk

(Continued on page 12)

Outreach and Service

(Continued from page 11)

Zuk continues delivering produce to locations in the Fargo-Moorhead area. He typically delivers about 10,000 pounds of dry beans and close to 20,000 pounds of potatoes from Susie Thompson's potato research project each fall.

References

¹*Rosebud Quilts and Quilters*, St. Francis Mission Quiltcards, Rosebud Indian Reservation, St. Francis, South Dakota.

²*The Star Quilt*, revised 2005, Jace DeCory, Lakota, Associate Professor Emeritus, Black Hills State University, Spearfish, South Dakota.

Students Learn through Service

The PLSC 312 Expanding the Boundaries of Learning with Service class taught by Ed and Brenda Deckard allows students to cast a vision about how they could serve the community and then carry out their vision through a service project during which they meet specific learning goals.

Animal Shelter Project

The aim of one project was to bring attention to fostering and adopting animals from local shelters for a farm or rural residence. The idea for the project stems from the close connection dogs have to farm and rural life. It is rare that a farm or rural residence doesn't have at least one dog. Many of the dogs that come to an animal shelter may not

be the best fit for city living, so fostering or adopting dogs to a farm could benefit the animal and the farm.

To meet their objective, the students organized an awareness and adoption event on campus. Dogs and representatives from Diamond in the Ruff and Homeward Animal Shelter spent time outside Loftsgard Hall, where the students also set up informational displays and activities intended to increase awareness of the time and attention it takes to care for a dog, the type of dog that is better for a farm or rural setting, and opportunities to volunteer at one of the shelters.

Earth Day Project

Another project focused on composting, xeriscape and water conservation. Students offered community education on these topics by participating in the "Party for the Planet" Earth Day event at the Red River Zoo in Fargo.



Zoo attendees, young and old, enjoyed transplanting wildflowers and native grasses indigenous to our region. Some want to help the environment, practice water and soil conservation, create added beauty, or attract butterflies to their yards. All these reasons fit with the PLSC 312 students' objectives to raise awareness about the importance of our resources such as soil, water and air, and protect our environment by reducing, reusing, and recycling. In addition to live plants, zoo attendees were able to take home seeds of native grasses to seed in their yards.



Middle School Students Learn About Food Science

Sixth graders at Ben Franklin Middle School in Fargo were treated to a hands-on food science lesson during their regular science class last week. Associate professor Senay Simsek, research specialists Kristin Whitney and Nathan Haugrud, and graduate students Jane Snelling and Aslihan Unuvar were welcomed by Ben Franklin teacher Travis Hoeg to teach about the science of taste and how different ingredients are used in food applications.



Simsek and Whitney showed how mixing two food additives transforms them into a gel like substance. Haugrud, Snelling and Unuvar conducted an experiment about density using sugar free and regular soda drinks. They also conducted a taste test of candy that highlighted the importance of the sense of smell and explained why we can't taste our food as well when we have a cold or a stuffy nose.

Hoeg thanked the scientists, saying, "It was awesome to see my students so excited and the Oohs and Aahs come out of their mouths with the fascination that you brought out in them."

State Crop Show Judges

The North Dakota Winter Show is a long-held tradition for anyone involved in agriculture in the state. It takes place the first week of March in Valley City, and hosts a variety of events, including the ND State Crop Show.

(Continued on page 13)

Outreach and Service

(Continued from page 12)

Joel Ransom has organized judges for the ND State Crop Show since he became the NDSU cereal crops Extension specialist in 2002. In 2018, twenty-four judges evaluated more than 200 crop samples submitted by 4-H and FFA students and others submitting in Open Classes. Eighteen of the judges were NDSU Department of Plant Sciences employees.



Fifteen classes, including Wheat, Amber Durum, Barley, Oats, Rye/Triticale, Legumes, Grasses, Millet, Ear Corn, Shelled Field Corn, Sunflower, Canola, Miscellaneous Crops and Sheaves, were judged. Each class had up to six different lots, for a total of 23 different lots. The top 4-H, FFA and Open Class samples were named, as well as the top six places in each crop lot.

Most of the judges have been judging these contests for many years. They do it because they are experts and want to support the Winter Show and the farmers, students and aspiring agronomists who participate in the contests. Ransom said that he rarely has problems recruiting the volunteer judges, who especially enjoy the lunch and ice cream provided by the North Dakota State Crop Show management team.

Graduate Students Beautify Local Trails

Members of the NDSU Plant Sciences Graduate Student Association volunteered with River Keepers of Fargo-Moorhead in the fall to help clean up recreational trails in North Fargo. River Keepers is an association that advocates for safe and sustainable use of the Red River of the North.



2019 Event Calendar

Department Events

www.ag.ndsu.edu/plantsciences/events

- May 2-3** Horticulture & Forestry Club Spring Plant Sale, Shepperd Arena, Main Campus
- July 22-24** Barley Field School, Main Campus
- Aug. 7** Horticultural Research Farm Tour, Absaraka
- Aug. 22** Potato Field Day, Larimore, Inkster, Hoople
- Sept. 5** Campus Field Day, Horticulture Research & Demonstration Gardens, Main Campus
- Sept. 30 - Oct. 3** NCI & NDSU Barley and Malt Quality: A Field to Brewhouse Perspective, NCI

Research Extension Center Field Days

(tentative) www.ag.ndsu.edu/research/field-days

- July 8** Central Grasslands REC, Streeter
- July 9** Hettinger REC
- July 10** Dickinson REC
- July 10** Williston REC (dryland & horticulture field day)
- July 11** Nesson Valley (irrigated field day)
- July 15** Agronomy Seed Farm, Casselton
- July 16** Carrington REC
- July 17** North Central REC, Minot
- July 18** Langdon REC
- Aug. 15** Oakes Irrigation

Graduate Student News

Production Ag Travel Grants

Master's students **Bryce Andersen**, **Alan Peterson** and **Swarup Podder**, and doctoral student **Sergio Cabello Leiva** attended the 2018 University of Minnesota Production Agriculture Symposium, hosted by the UMN Applied Plant Sciences Graduate Program. The students each presented their research and received a travel grant to attend the symposium. The students are advised by Marisol Berti.



From left: Podder, Berti, Andersen, Cabello Leiva, Peterson

Oil Chemists Travel Grant

Cereal science doctoral student **Minwei Xu** was awarded a Lipid Oxidation and Quality Division Student Travel Grant to attend the 2018 American Oil Chemists' Society Annual Meeting and Expo in Minneapolis, Minnesota in May. He also was invited to present a talk during the meeting. He is advised by Bingcan Chen.



Food Technologists Travel Awards

National

Cereal science doctoral student **Yang Lan** was awarded a Feeding Tomorrow Graduate Travel Scholarship to attend the 2018 Institute of Food Technologists annual meeting in Chicago in July. Recipients must volunteer during the meeting and submit a written testimonial regarding their experience afterward. Lan is advised by Jiajia Rao.



Regional

Cereal science doctoral students **Minwei Xu** and **Supun Fernando** received travel awards from the Minnesota Section of the Institute of Food Technologists. They are advised by Bingcan Chen and Frank Manthey, respectively.



Xu



Fernando

Symposium Awards

Members of the NDSU Plant Sciences Graduate Student Association attended the 34th Annual Plant Science Graduate Student Symposium at the University of Winnipeg, Manitoba, in March. Attendees presented research to their peers and competed in five categories. Two Plant Sciences graduate students won awards for their presentations.

Nathan Haugrud won first place in the Agronomy and Weed Science competition for his presentation, *Delayed Cultivation to Supplement Chloroacetamide Herbicides in Sugarbeet*. He is a master's student advised by Tom Peters.



Haugrud

Sergio Cabello Leiva won second place in the Agronomy and Weed Science competition for his presentation, *Cover Crops Decreased Soil Nitrogen (N-NO₃) Previous Sugarbeet Production in the Northern Great Plains*. He is a doctoral student advised by Marisol Berti.



Cabello Leiva

The annual symposium brings together graduate students studying disciplines in the plant sciences from the "prairie universities" of North America: North Dakota State University, the University

of Saskatchewan, and the University of Manitoba.

Grain Quality Poster Award

Cereal science master's student **Ana Magallanes López** won the People's Choice Award for the best poster at the 2018 NC-213 U.S. Quality Grains Research Consortium annual meeting. Her poster was *Wet Milling Affects Deoxynivalenol Concentration in Wheat Starch and Gluten*. She is advised by Senay Simsek.



Student Receives Local and National Awards

Doctoral student **Andrej Svyantek** received awards at meetings and competitions in 2018.



He was awarded the prestigious Presidents' Award for Scholarship in Viticulture by the American Society for Enology and Viticulture (ASEV) at the society's 2018 National Conference in June. Students who receive this award participate in ASEV outreach and promotion events throughout the year.

Svyantek won first place in the Viticulture category of the graduate student poster competition at the 2018 American Society for Enology and Viticulture-Eastern Section meeting held in July. His poster was *Early Season Leaf Removal Reduces Cluster Compactness and Yield in North Dakota 'Marquette'*.

He won second place for his presentation at the second annual NDSU Graduate Student Council Research Symposium, where he presented *Acidity and Cold-Hardiness Are Not Linearly Correlated with Yield for 'Frontenac' Grapevines*.

Svyantek is advised by Harlene Hatterman-Valenti.

Graduate Student News

Student Selected for Food Technologists Challenge

Cereal science master's student **Jane Snelling** was selected to participate in the Institute of Food Technologists Student Association 2018



Global Challenge. The event challenges teams of students from around the world to develop solutions for a pressing global food issue. Participation in the event offers students a chance to participate in special workshops, receive guidance from experienced mentors, and understand how global collaboration will advance innovation in the science of food.

Snelling is advised by Senay Simsek.

Weed Society Contest Awards

Four graduate students received awards at the 2018 North Central Weed Science Society Collegiate Weed Science Contest held at Gothenburg, Nebraska in July. **Nathan Haugrud** won first place in the Western division graduate section for written calibration and agronomic problem solving.



From left: Brooke, Haugrud, Satrom, Theisen

The team of master's students **Matthew Brooke, Haugrud, Kelly Satrom, and Nickolas Theisen** placed third overall out of five Western division schools.

Brooke and Theisen are advised by Harlene Hatterman-Valenti. Haugrud is advised by Tom Peters and Satrom is advised by Kirk Howatt.

Gamma Sigma Delta Honors Students

Students from the Department of Plant Sciences captured the top awards for their presentations at the inaugural NDSU Chapter of Gamma Sigma Delta Faculty and Student Symposium.

Maneka Malalgoda was awarded the Distinguished Graduate Student in Agriculture award. This award recognizes high scholastic performance, leadership achievements, professional development related achievements and contributions to the field of agriculture. Malalgoda is a doctoral candidate in cereal science advised by Senay Simsek.



Malalgoda



Cabello-Leiva

Sergio Cabello-Leiva took first place for his presentation, *Cover Crops Decreased Soil Nitrogen (N-NO₃) Prior to Sugarbeet Production in the Northern Great Plains*. He is a doctoral student advised by Marisol Berti.



Haugrud

Nathan Haugrud took second place for his presentation, *Delayed Cultivation to Supplement Chloroacetamide Herbicides in Sugarbeet*. He is a master's student advised by Tom Peters.



Svyantek

A third place tie was awarded to Andrej

Svyantek and Serap Vatansever. Svyantek presented *Grapevine Pruning Modifications Alter Fruit Chemistry and Yield More Than Augmentation of Canopy Architecture through Supplemental Trellis Support*. He is a doctoral student advised by Harlene Hatterman-



Vatansever

Valenti. Vatansever presented *Fortification of Pea Protein in Bread System to Enhance Nutritional Quality*. She is a doctoral student in cereal science advised by Clifford Hall.

Duncan Scholar

Alex Wittenberg was selected by the College of Agriculture, Food Systems and Natural Resources to participate in the 2018-19 Russell and Anna Duncan Research Scholars program.



Wittenberg is advised by Marisol Berti and the title of their research is *Morphological Characteristics of Winter- and Summer-Biotypes of Camelina*. The research objective is to develop a rapid identification method for camelina seed that will enable producers to determine that the seed they are purchasing is winter hardy for North Dakota.

Wittenberg completed his bachelor's degree in crop and weed sciences at NDSU in May 2018 and began working on his master's degree in plant sciences in fall 2018. He is continuing his undergraduate research as his master's thesis project.

Cereal Chemists Awards

Ana Magallanes López and Maneka Malalgoda received awards at the American Association of Cereal Chemists International (AACCI) meeting in London, United Kingdom, in October.



Magallanes López

Master's candidate Magallanes López won second place in the Best Student Research Paper competition for her presentation, *Value-Adding Strategies for Deoxynivalenol*



Malalgoda

(Continued on page 16)

Graduate Student News

(Continued from page 15)

Contaminated Grain: Characterization of Wet Milling Fractions. She was one of five finalists from around the world competing for this distinguished award.

Doctoral candidate Malalgoda served as a student representative on the AACCI meeting planning committee and presented two posters at the meeting. She won third place in the Carbohydrate Division/Megazyme Poster Award competition for her poster, *Timing of Pre-Harvest Desiccant and Its Effects on Wheat Starch Properties.*

Magallanes López and Malalgoda are advised by Senay Simsek.

Industrial Crops Awards

Master's students **Alan Peterson** and **Alex Wittenberg** received awards for their participation in the 30th annual meeting of the Association for the Advancement of Industrial Crops in London, Ontario, in September.

Peterson received a Travel Award and the Best Oral Presentation Award in the General Crops and Products Division for his presentation, *Maximizing Cover*



Peterson (left) and Wittenberg

Crop Performance by Interseeding Cover Crops into Standing Soybean.

Wittenberg received a Travel Award in the Oilseeds Division for his presentation, *Morphological Characteristics of Winter- and Summer-Biotypes of Camelina [Camelina Sativa (L.) Crantz].*

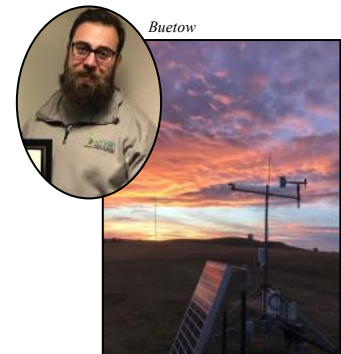
Peterson and Wittenberg are advised by Marisol Berti.

Photo Contest Awards

Master's student **Kutay Yilmaz** received second place in the "planting" category for a photo he submitted to the United Sorghum Checkoff Program #FromtheField photography contest. The photo depicts the New Crops project team, led by Burton Johnson, planting White Grain Sorghum near Prosper, ND in spring 2018 for Yilmaz's sorghum seeding date study.



Doctoral student **Ryan Buetow** received second place in the "Tools at Work" category of the CSA News annual photo contest. His photo depicts a North Dakota Agricultural Weather Network weather station located at NDSU Dickinson Research Extension Center, where he works as an Extension specialist.



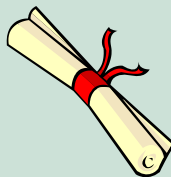
2018 Doctoral and Master's Graduates

Doctoral Degrees

Jason Adams (*Plant Sciences, Zollinger*)
 Muhammad Arif-Uz-Zaman (*Plant Sciences, Rahman*)
 Rahil Ashtari Mahini (*Plant Sciences, McPhee*)
 Marina (Dobrydina) Johnson (*Plant Sciences, Elias*)
 Maneka Malalgoda (*Cereal Science, Simsek*)
 Daniel Restrepo Montoya (*Genomics & Bioinformatics, McClean/Osorno*)

Master's Degrees

Kenneth Paul Beamer (*Plant Sciences, Gramig*)
 Calli Feland (*Plant Sciences, Ransom*)
 Nelson Geary (*Plant Sciences, Robinson*)
 Melissa Geiszler (*Plant Sciences, Ransom*)
 Nathan Haugrud (*Plant Sciences, Peters*)

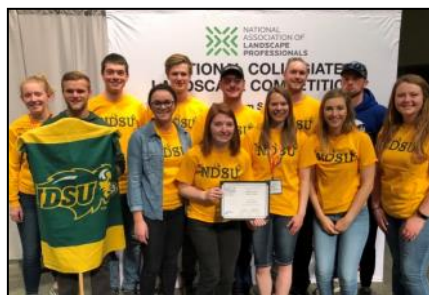


Jorden Hinrichsen (*Plant Sciences, Hatterman-Valenti*)
 Lucas Holmes (*Plant Sciences, Kandel*)
 Razi Ibrahim (*Plant Sciences, Hatterman-Valenti/Thompson*)
 Eyada Khalaf (*Cereal Science, Shetty*)
 Changhyeon Kim (*Plant Sciences, Dai*)
 Codee Lee (*Plant Sciences, Howatt*)
 Ana Magallanes López (*Cereal Science, Simsek*)
 Lucy (Lund) Mazaheri (*Genomics & Bioinformatics, McClean*)
 Kathryn Plotke (*Horticulture, West*)
 Alison (Stone) Pokrzywinski (*Plant Sciences, Hulke*)
 Md Mahfuzur Rahman (*Cereal Science, Simsek*)
 Matthew Rellaforde (*Plant Sciences, Ransom*)
 Peder Schmitz (*Plant Sciences, Kandel*)
 Bethany Stebbins (*Cereal Science, Simsek*)
 Katelynn Walter (*Plant Sciences, Osorno*)



Undergraduate Student News

Horticulture and Forestry Club Attends Competition



NDSU Horticulture and Forestry Club students attended the 2018 National Collegiate Landscape Competition sponsored by the National Association of Landscape Professionals at Alamance Community College in North Carolina in March. It is the largest national competition and career recruitment event for college students studying horticulture and landscaping, with over 750 students from 62 universities and colleges competing in 30 events. Students demonstrated their skills in tree climbing, hardscaping, specimen identification, skid steer operation, sales, design, irrigation, wood construction, and more. NDSU ranked 13th out of 62 teams.

In individual events, **Halley Bartlett** took first place in interior landscape

design and **Anne Gatzke** took second place in irrigation design.

Over 60 scholarships were handed out by the NALP Foundation totaling nearly \$100,000.

Connor Hagemeyer, Sarah Kickert, Torie Jones, Kaylee Pierce, and **Kari Trembath** each received a scholarship.

NDSU also won the Stihl Spirit Award, based on a combination of the team's social media presence, including a video created by Bartlett and Twitter posts by faculty advisor Todd West, and the team's attitude during the competition.



Bartlett



Gatzke



Scholarship recipients, left to right: Hagemeyer, Kickert, Pierce, Jones, Trembath

The NDSU Horticulture and Forestry Club is advised by Harlene Hatterman-Valenti and Todd West.

NDSU Ag Week Awards

The NDSU Agriculture Collective held the 4th annual NDSU Ag Week in April. The week of activities included cook-outs and yard games, lectures by agriculture industry experts, a student research poster session, bake sale, and more. During the closing banquet, the College of Agriculture, Food Systems and Natural Resources named its Top 10 Seniors and Outstanding Senior.



Eggen



Jones

Crop and weed sciences seniors **Christopher Eggen** and **Megan B. Jones** were named Top 10 Seniors and Jones was named the Outstanding Senior.

Student Body President

Crop and weed sciences student **Chase Grindberg** was elected 2018-19 NDSU Student Body President. His

(Continued on page 18)

Summer Interns

University of Puerto Rico Summer Research Fellowship



Wilfredo Seda (*left*), M.S. student in Plant Breeding, worked in the barley breeding program led by Rich Horsley.

Edil Vidal Torres (*center*), M.S. student in Food Science, worked in the wheat quality program led by Senay Simsek.

Derick Crespo (*right*), M.S. student in Crop Protection, worked in the weed biology and ecology program led by Gre-ta Gramig.

Plant Sciences Undergraduate Summer Research Fellowship



Neil Olson is a Crop and Weed Sciences student from Detroit Lakes. He worked as an intern in the sunflower, minor and new crops project led by Burton Johnson.

Undergraduate Student News

(Continued from page 17)

running mate and Vice President is hospitality and tourism management student Marisa Pacella.

Commencement Speaker

Crop and weed sciences senior **Christopher Egen** was selected to give the student address at the morning commencement ceremony in May 2018. His message for his classmates was, "Be part of a team, lead by example and appreciate the journey."



Industrial Crops Award

Crop and weed sciences student **Neil Olson** received the Best Poster Award, General Crops Division, in the 30th annual meeting of the Association for the Advancement of Industrial Crops in London, Ontario, in September. His poster, *Industrial Hemp Plant Population Effect on Crop Per-*



formance in North Dakota, presented research he worked on as a Plant Sciences Undergraduate Summer Research Fellowship Intern. He interned with Burton Johnson in summer 2018. Olson is advised by Kirk Howatt.

Horticulture and Forestry Club Takes Top Honors at Regionals

Members of the NDSU Horticulture and Forestry Club won awards at the Mid-America Collegiate Horticultural Society annual meeting and competition hosted by Colorado State University in September.



NDSU team, left to right: Schumacher, Gilbraith, Hagemeyer, Jones

The NDSU team took first place overall for the third year in a row, topping teams from Iowa State, University of Wisconsin-River Falls, University of Minnesota-Crookston, and South Dakota State. Team members were horticulture students **Jason Gilbraith**, **Connor Hagemeyer**, **Torie Jones**, and **Garrett Schumacher**.

Hagemeyer and Jones also placed individually. **Hagemeyer** received first place individual, first place in woody plant identification, first place in general knowledge, and second place in herbaceous plant identification. **Jones** received third place in fruit, vegetable and plant judging and third place in woody plant identification.



Hagemeyer



Jones

The Horticulture and Forestry Club is advised by Harlene Hatterman-Valenti and Todd West.

Scholarships

Student Scholars Honored

Sixty-eight undergraduate and twenty-eight graduate students from the Department of Plant Sciences were honored at the 2018 College of Agriculture, Food Systems, and Natural Resources scholarship recognition program in November. More than \$76,000 was awarded to these students.

Scholarship funds were provided by more than 60 sponsoring individuals, businesses and organizations.

Doctoral Dissertation Fellowship

Cereal science doctoral student **Amber Kaiser** received a NDSU College of Graduate and Interdisciplinary Studies

2018-19 Doctoral Dissertation Fellowship. The fellowship is designed to support the completion of a student's dissertation.



Kaiser's dissertation is *Hammer Milling of Yellow Split Pea*. She is advised by Clifford Hall. Kaiser also is working on a master's degree in applied statistics advised by former NDSU statistics assistant professor Seung Won Hyun.

Sugarbeet Scholarship

Plant sciences master's student **Nathan Haugrud** was awarded the Alan Dexter Scholarship by the Sugarbeet Research and Education Board of Minne-

sota and North Dakota, during the 48th annual NDSU/ University of Minnesota Sugarbeet Research Reporting Session in January 2018.



The Alan Dexter Scholarship is awarded to M.S. or Ph.D. students at NDSU or the U of M whose thesis project objective is related to an aspect of sugarbeet production, processing or economics. Dr. Alan Dexter is a Professor Emeritus in the NDSU Department of Plant Sciences and retired NDSU/ U of M Extension sugarbeet and weed control specialist.

(Continued on page 19)

Scholarships

(Continued from page 18)

Haugrud's graduate research thesis is *Cultivation to Supplement Residual Soil Herbicides in Sugarbeet*, and he is advised by Tom Peters.

Food Technologists Scholarships

Cereal and food science students **Madison Gohl**, **Katelyn Schmoll** and **Minwei Xu** received scholarships during the Minnesota Section of the Institute of Food Technologists in April. Gohl is an accelerated master's student completing a bachelor's in food science and working on a master's in cereal science simultaneously. Schmoll is a food science student pursuing a bachelor's degree. Both students are advised by Clifford Hall. Xu is a doctoral student in cereal science. He is advised by Bingcan Chen.



From left: Xu, Schmoll, Gohl

Turfgrass Management Scholarship

Horticulture student **Matthew Becker** received a scholarship from the Golf Course Superintendents' Association of America. Becker is a junior majoring in horticulture, sports and urban turfgrass management option, with a soil science minor. He is advised by Deying Li.



Landscape Association Scholarship

Horticulture student **Shawna Coalwell** was named a 2018-2019 Minnesota Nursery and Landscape Association

Foundation Academic Award Winner. She received a scholarship co-sponsored by Southview Design, a landscape contractor headquartered in St. Paul, MN. Coalwell is advised by Harlene Hatterman-Valenti.



Crop Improvement Scholarships

Crop and weed sciences students **Elizabeth Blessum**, **Vincent Carruth** and **Kaden Martinson** received North Dakota Crop Improvement and Seed Association scholarships. Blessum is a senior and has accepted a position in the BASF Professional Development Program, which she will start after graduation. Her advisor is Kirk Howatt. Martinson is a senior and is working as an agronomist at Leading Edge Equipment in Devils Lake, ND. His advisor is Juan Osorno. Carruth is a freshman and is advised by Ed Deckard.



Martinson (left) and Blessum. Carruth not pictured.

Grain Dealers Scholarships

Mackenzie Derry, **Kody Durbin**, **Amber Hermanson** and **Kelsey Pladson** each received a scholarship from the North Dakota Grain Dealers Association Education Foundation. Derry and Durbin are seniors majoring in crop and weed sciences. Their advisors are Kirk Howatt and Brenda Deckard, respectively. Pladson is a senior majoring in food science and food safety and is advised by Anuradha Vegi. Hermanson is a sophomore majoring in horticulture and is advised by Harlene Hatterman-Valenti.



From left: Hermanson, Pladson, Durbin, Derry

Corn Growers Scholarships

Crop and weed sciences students **Vincent Carruth** and **Blake Nelson** received North Dakota Corn Growers Association scholarships. Carruth is a freshman advised by Ed Deckard and Nelson is a sophomore advised by Xiwen Cai. Both students plan to work as agronomists in the agriculture industry in the future.



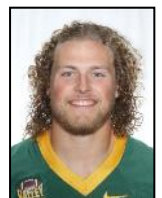
Carruth (left) and Nelson

Student Athletes Awarded Scholarships

Crop and weed sciences students and football players **Karson Schoening** and **Derrek Tuszka** were among 17 NDSU athletes who were awarded scholarships during the 45th Annual Harvest Bowl in November. Schoening received the John and Kay Dean Harvest Bowl Scholarship and Tuszka received the Farmer's National Harvest Bowl Scholarship.



Schoening



Tuszka

Memorials

Gonzalo Rojas-Cifuentes



Gonzalo Rojas-Cifuentes, assistant director of North Dakota Foundation Seedstocks, passed away October 22, 2018. He had been employed at NDSU for 15 years.

Rojas-Cifuentes earned his master's and doctoral degrees at NDSU in crop production and plant breeding/genetics, respectively, and was hired in 2003 as a postdoctoral research fellow in the dry bean breeding program, where he was part of a small team that carried on the program during a five-year gap before a dry bean breeder was hired. In 2009, he became the assistant director for the North Dakota Foundation Seedstocks program. He was instrumental in the coordination and management of the seed distribution programs. He also taught a course in seed production and technology.

In 2012, Rojas-Cifuentes and his wife became U.S. citizens. "I am proud to be Chilean by birth and American by choice," he said.

In May 2018, Rojas-Cifuentes was awarded the prestigious President's

Volunteer Service Award for contributing over 350 hours of volunteer work in Guinea, West Africa in September 2017. Read about his award at <https://bit.ly/2HzIjGz>.

Bryce Farnsworth



Bryce Farnsworth, retired research specialist, passed away September 13, 2018.

Farnsworth received his bachelor's degree in horticulture at NDSU and was hired in 1974 as an agricultural research technician in the potato improvement program. His position was later reclassified as research specialist.

In 1998, Farnsworth received a NDSU Agriculture Professional Staff Award for Excellence and was named an Honorary Life Member by the Potato Association of America. In 2003, he received the Prairie Garden Award for Excellence from the Prairie Garden Committee, Manitoba, Canada.

Farnsworth was involved in establishing the current NDSU Horticulture Research and Demonstration Gardens (southwest entrance to campus at the corner of 12th Ave. and 18th St. N),

lending his daylily (*Hemerocallis*) expertise to relocating the Historic Daylily Display Garden, an official American Hemerocallis Society (AHS) Display Garden. With over 1700 historic and modern cultivars, this garden is one of the three largest of its kind in the world, and the only Historic AHS Display Garden located at a university.

He retired from NDSU in 2012 after 38 years of service.

Rachel Olson



Rachel Olson, retired food technologist, passed away January 22, 2018.

Olson received her bachelor's degree at NDSU and was hired in 1973 as a lab technician to conduct research studies in the areas of cereal carbohydrates and baking. She was later promoted to food technologist. She also worked on wheat quality.

She retired from NDSU in 2012 after 39 years of service.



Newsletter Archive

Take a stroll down memory lane with the *Blizzard Watch* newsletter online archive! Former department chair Jack F. Carter began the annual department newsletter in 1967, and the tradition has continued every year since. In 1989 the newsletter was named the *Blizzard Watch*. The archived issues contain all the significant happenings in the department over the years.

The *Blizzard Watch* newsletter and archive is online!
www.ag.ndsu.edu/plantsciences/news/newsletter

Let's Keep in Touch!

Let us know what you are up to now and update us with your current contact info so we can keep in touch. Please take a moment to send us your update via email, or go to our website to complete an online form. We look forward to hearing from you!

Email: ndsu.plantsciences@ndsu.edu

Online: www.ag.ndsu.edu/plantsciences/alumni

Plant Sciences Faculty

Richard D. Horsley	Dept. Head and Professor (6-rowed and 2-rowed barley breeding, genetics)
Nonoy Bandillo	Assistant Professor (pulse breeding, genetics)
Marisol Berti	Professor (forages and biomass crop production)
Xiwen Cai	Professor (wheat genetics and cytology, genetics teaching)
Bingcan Chen	Assistant Professor (food and cereal chemistry)
Michael J. Christoffers	Associate Professor (weed science, genetics teaching)
Wenhao (David) Dai	Professor (woody plant physiology, biotechnology)
Edward L. Deckard	Professor (crop physiology)
Elias M. Elias	University Distinguished Professor, J.F. Carter Durum Wheat Breeding/Genetics Endowed Professor (durum wheat breeding)
Kenneth F. Grafton	Interim Provost; VP for Ag. Affairs; Dean of College of AFSNR; (dry bean)
Greta Gramig	Associate Professor (weed science)
Andrew Green	Assistant Professor (hard spring wheat breeding)
Clifford Hall, III	Professor (flaxseed, antioxidants, phytochemical stability in food systems)
Harlene Hatterman-Valenti	Assistant Dept. Head and Professor (high value crop production)
Theodore C. Helms	Professor (soybean breeding, genetics)
Kirk A. Howatt	Associate Professor (weed science-annual weeds)
Joe Ikley	Assistant Professor (Extension weed control)
Burton L. Johnson	Professor (sunflower, minor and new crop production)
Thomas Kalb, II	Extension Horticulture Specialist (western ND)
Hans Kandel	Professor (Extension agronomist, broadleaf crop production)
Chiwon W. Lee	Professor (greenhouse production, vegetable culture and breeding)
Deying Li	Associate Professor (sports turf management)
Xuehui Li	Assistant Professor (statistical genomics)
Frank A. Manthey	Professor (durum and pasta quality)
G. Francois Marais	Professor (hard red winter wheat breeding, genetics)
Phillip E. McClean	Professor (dry bean genetics, biotechnology)
Esther McGinnis	Assistant Professor (Extension horticulture)
Michael S. McMullen	Professor (oat breeding, genetics)
Rebekah Oliver	Assistant Professor of Practice (genetics)
Juan M. Osorno	Associate Professor (dry edible bean breeding)
Tom Peters	Assistant Professor (Extension agronomist, sugarbeet/weed science)
Mukhlesur Rahman	Assistant Professor (oilseed breeding, genetics)
Joel K. Ransom	Professor (Extension agronomist, small grains and corn)
Jiajia Rao	Assistant Professor (food chemistry and ingredient technology)
Andrew Robinson	Assistant Professor (Extension agronomist, potato production)
Paul Schwarz	Professor (malting barley quality)
Kalidas Shetty	Assoc. VP for Internatl. Partnerships; Professor (plant metabolism, food security)
Senay Simsek	Bert L. D'Appolonia Endowed Professor (wheat end quality)
Asunta (Susie) L. Thompson	Associate Professor (potato breeding)
Anuradha Vegi	Assistant Professor of Practice (food safety, processing, microbiology)
Todd West	Professor (woody plant improvement)
Qi (Chee) Zhang	Associate Professor (turfgrass stress physiology)
Alan Zuk	Associate Professor (sports and urban turfgrass management)

Emeritus Faculty

Cereal Science

Bert D'Appolonia
Dennis Gordon
Khalil Khan
Vernon Youngs

Plant Sciences

Duane R. Berglund
Arthur A. Boe
Harold Z. Cross
Alan G. Dexter
Murray E. Duysen
Jerry D. Franckowiak

Richard C. Frohberg
Dale E. Herman
Neal S. Holland
H. Roald Lund
Rodney G. Lym
Calvin G. Messersmith
Dwain W. Meyer

Donald C. Nelson
Ronald C. Smith
LeRoy A. Spilde
Dean A. Whited
Richard K. Zollinger

Adjunct & Affiliate Faculty (*USDA)

James V. Anderson* (plant biochemistry)
James S. Beaver (dry bean genetics)
David Bonnett (hybrid wheat breeding)
Patrick M. Carr (sustainable agriculture)
Wun S. Chao* (perennial weeds)
Linda Dykes* (food science and technology)
Justin D. Faris* (wheat molecular genetics)
Shana M. Forster (crop production)
Jose G. Franco, Jr.* (agroecology/sust. food systems)
Karen L. Fugate* (sugarbeet physiology)
Russell W. Gesch (physiology of oilseed crops)
Michael Grusak* (nutrition of crop plants)
Y. Q. Gu (wheat genetics)
Darrin M. Haagensohn* (crop physiology and ecology)
David P. Horvath* (perennial weed physiology)
Brent S. Hulke* (flax and sunflower genetics)

Brian M. Jenks (integrated weed management)
Blaine E. Johnson (quantitative genetics)
Edward C. Lulai* (potato physiology)
Kevin McPhee (pulse crops)
Grant Mehring (agronomy; wheat and corn)
Mohamed Mergoum (hard red spring wheat breeding)
Jae-Bom Ohm* (grain science)
Rebekah E. Oliver (genetics)
Michael H. Ostlie (weed science)
Timothy G. Porch (dry bean breeding and genetics)
Lili Qi* (wheat genetics)
Gerald J. Seiler* (sunflower and sugarbeet germplasm)
Tom C. Walk (plant breeding database manager)
Jochum J. Wiersma (small grains)
Steven S. Xu* (hard red spring wheat development)

Postdoctoral Research Fellows

Leqi Cui (food chemistry)
Upasana Ghosh (potato breeding)
Yadav Gyawali (wheat genetics and cytology)
Jawahar Jyoti (barley genetics)
Ajay Kumar (durum breeding)
Yunming Long (hard red spring wheat development)
Guojia Ma (sunflower genetics and breeding)

Aliya Momotaz (wheat genetics)
Sepehr Naraghi (oat breeding)
Atena Oladzad Abbasabadi (dry bean genetics)
Dipayan Sarkar (plant metabolism and food security)
Kristin Simons (dry bean breeding)
Zahirul Talukder (sunflower germplasm development)
Qijun Zhang (wheat stem rust resistance)

North Dakota Foundation Seedstocks

Steve Sebesta, Director
Joyana Baumann, Assistant Director

Toni Muffenbier, Accounting Specialist

Research and Support Staff

Matthew Abdallah (hard spring wheat breeding)
Collin Auwarter (high value crop production)
Jason Axtman (durum breeding)
John Barr (barley quality)
Brad Bisek (hard red winter wheat breeding)
Kristin Boll (weed biology and ecology)
Eric Brandvik (potato production)
Brian Cattnach (barley breeding)
Kathy Christianson (wheat quality)
Ashley Cooper (soybean breeding)
Janet Davidson-Harrington (weed science)
Brenda Deckard (Director, Plant Sci. Student Services)
Chad Deplazes (Extension crop production)
Darin Eisinger (Extension crop production)
Brock Fagerstrom (soybean breeding)
Jerry Gee (soybean breeding)
James Gillespie (barley quality)
John Grieger (barley breeding)
Dave Hanson (soybean breeding)
Nathan Haugrud (wheat quality)
Justin Hegstad (statistical genomics)
Ana Heilman-Morales (large database breeding pipeline)
Karen Hertsgaard (information specialist)
Megan Hest (wheat quality)
Peter Ihry (potato production)
Kreg Kercher (flax breeding)
Barb Laschkewitsch (vegetables and perennials)
Rian Lee (dry bean genetics)
Yu Liu (durum and pasta quality)
Alexa Lystad (sugarbeet weed control)
Vicki Magnusson (woody plants)
Sally Mann (durum wheat breeding)
Sandra Mark (weed science)
Kelly McMonagle (wheat quality)
Joseph Mettler (annual weeds)
Greg Morgenson (woody plants)
Mary Niehaus (cereal and food science)
Richard Nilles (potato breeding)
DeLane Olsen (wheat quality)
Allen Peckrul (food and cereal chemistry)
James Perleberg (durum and pasta quality)
Paula Petersen (new crops)
Alan Peterson (forages and biomass crop production)
John Posch (dry bean breeding)
Andrew Ross (canola breeding)
Kevin Rue (turfgrass)
Robert Sabba (weed science)
Evan Salsman (durum breeding)
Thor Selland (hard spring wheat breeding)
Amy Stolt (oat breeding)
Gwen Thomas (wheat quality)
Jesse Underdahl (hard spring wheat breeding)
Jody VanderWal (dry bean breeding)
Tom Walk (large database breeding pipeline)
Adam Walz (hard spring wheat breeding)
Kristin Whitney (wheat quality)
Wei Zhang (wheat genetics and cytology)

Office Staff

Kamie Beeson, Information Processing Specialist
Eileen Buringrud, Administrative Assistant
Krista Caldwell, Senior Accounting Specialist
Cora Crane, Grants Coordinator
Karen Jevning, Administrative Secretary
Lisa Johnson, Administrative Secretary
Lorin Miller, Accountant
Shannon Ueker, Administrative Secretary

Graduate Students

<u>Cereal Science</u>	<u>Deg.</u>	<u>Advisor</u>	<u>Plant Sci/Genomics/Hort</u>	<u>Deg.</u>	<u>Advisor</u>
Abdulrahman Alahmed	MS	Simsek	Kory Johnson	MS	Kandel
Hiroshi Ando	MS	Manthey	Jacob Lachowitz	MS	Hatterman-Valenti
Natsuki Barber	PhD	Simsek			
Patricia Cabas Luhmann	PhD	Manthey	Emma Larson	MS	Peters
Supun Fernando	PhD	Manthey	Justin Leier	MS	Green
Madison Gohl	AMS	Hall	Yuan Liu	MS	X. Li
Hanna Gross	MS	Rao	Alexa Lystad	MS	Peters
Zixuan Gu	PhD	Chen	Jithin Mathew (Genomics)	MS	Shetty
Haiyang Jiang	PhD	Rao	Felicity Merritt	MS	Thompson
Amber Kaiser	PhD	Hall	Joe Mettler	MS	Howatt
Yang Lan	PhD	Rao	Kennedy Money	MS	Hulke
Yu Liu	MS	Manthey	Kord Nolte	MS	Christoffers
Jayani Maddakandage Dona	MS	Simsek	Suman Parajuli	MS	Lee
Ana Magallanes Lopez	PhD	Simsek	Amanda Peters Haugrud (Genomics)	PhD	Faris
Godras Manuhara	PhD	Simsek	Alan Peterson	MS	Berti
Sara Moayed	PhD	Manthey	Swarup Podder	MS	Berti
Xiaoxi Qi	PhD	Rao	Edowardo Poletti	PhD	Thompson
Ramnarain Ramakrishna	PhD	Shetty	Jesse Puka-Beals	MS	Gramig
Delgersaikhan Shinezorigt	MS	Manthey	Sanzida Rahman	MS	Thompson
Jane Snelling	MS	Simsek	Shuangfeng Ren (Genomics)	PhD	Cai
Serap Vatansever	PhD	Hall	Jose Rivera	PhD	Horsley
Jing Wan	PhD	Rao	Jayanta Roy	PhD	Rahman
Minwei Xu	PhD	Chen	Kevin Rue	MS	Zhang
Fengchao Zha	PhD	Chen	Mory Rugg	PhD	Green
Muxin Zhao	MS	Chen	Katherine Running (Genomics)	PhD	Faris
			Evan Salsman	PhD	X. Li
<u>Plant Sci/Genomics/Hort</u>	<u>Deg.</u>	<u>Advisor</u>	Kelly Satrom	MS	Howatt
Kyle Aasand	MS	Johnson	Michael Schaefer	MS	McPhee
Bryce Andersen	MS	Berti	Mattie Schmitt	MS	Ransom
Naa Korkoi Ardayfio	PhD	McMullen	Peder Schmitz	PhD	Kandel
Enise Ayyildiz	MS	Robinson	TM Shaikh	MS	Rahman
Dylan Barry	MS	Marais	Brian Smart	MS	Hulke
Peter Beerbower (Genomics)	MS	McClellan	Kyla Splichal (Horticulture)	MS	McGinnis
James Bjerke	MS	Thompson	Jordan Stanley	PhD	Ransom
Matthew Brooke	MS	Hatterman-Valenti	Nicholas Steffl	MS	Johnson
			Andrej Svyantek	PhD	Hatterman-Valenti
Ryan Buetow	PhD	Ransom			
Sergio Cabello Leiva	PhD	Berti	Hongbin Tao	PhD	Marais
Pradeepika Chintha	PhD	Shetty	Ikbil Tatar	MS	Hatterman-Valenti
Bethany Christensen	MS	Ransom			
Thomas Drietz	MS	Li	Nickolas Theisen	MS	Hatterman-Valenti
Edgar Escobar Romero	MS	Osorno			
Austin Espe	MS	Shetty/Hatterman-Valenti	Federico Velasquez Villegas	MS	Osorno
			Jonathan Vollmer	MS	Rahman
Steffen Falde	MS	Thompson	Tiffany Walter	MS	Howatt
Lena Fiskness (Horticulture)	MS	Hatterman-Valenti	Adam Walz	MS	Green
			Runhao Wang	PhD	X. Li
Aaron Froemke	MS	Howatt	Sudeshi Wasala Seneviratne (Gen.)	PhD	Faris
Venkata Ganaparthi	MS	Marais	Frank Wilczek	MS	Ransom
Melissa Geiszler	PhD	Ransom	Devin Wirth	MS	Zollinger
Connor Hagemeyer (Horticulture)	MS	West	Alex Wittenberg	MS	Berti
Ahasanul Hoque	PhD	Rahman	Kutay Yilmaz	MS	Johnson
Seyed Ali Hosseinirad	PhD	Elias	Jinglun Zhang	MS	Cai/Xu
Eddy Ixcotoyac	MS	Osorno	Mingyi Zhang (Genomics)	PhD	Cai
Justin Jacobs	MS	Johnson	Puying Zheng	MS	Rahman

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The Department of Plant Sciences at North Dakota State University is a diverse department with regional, national, and world-respected expertise. As part of the College of Agriculture, Food Systems, and Natural Resources, the department offers academic programs that prepare students for careers in expanding job markets. Undergraduate programs are Crop and Weed Sciences, Food Science, and Horticulture; graduate programs are the M.S. in Plant Sciences/Horticulture, Cereal Science, and the Ph.D. in Plant Sciences and Cereal Science.

The Department of Plant Sciences provides students with the knowledge, skills and understanding critical for professional success in a changing world. If you have an interest in plants and an interest in making a difference, this department is for you. Invest in your career by investing in Plant Sciences.

Agriculture Is in Our Roots

Research – Teaching – Extension

Biotechnology Breeding Cereal Science Food Science Forestry Genetics Horticulture
Physiology Production Turfgrass Weed Science

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