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A. Goals and Priorities:
- Increase reputation and visibility of the department.
- Increase stability/excellence by continuing fund raising for endowed chair positions in Cooperatives and Risk and Trading.
- Complete department’s strategic plan document.
- Hire new faculty/staff to replace retirements/resignations.
- Enhance student learning in both undergraduate programs and graduate programs.
- Complete Program Review Report for 2015.
- Continue to increase/maximize use of the Commodity Trading Room (CTR) with other programs.

B. Executive Summary of Accomplishments in Achieving Goals and Priorities
The year 2015 was very successful as we accomplished all our goals and priorities. The department organized several extension/outreach conferences (in Agricultural Lending, Crop Insurance, Renewable Energy and Crop Production Outlook) and continued a regular news column on “Spotlight on Economics” and “It’s Happening at State.” Faculty, support staff, and students won eight awards for excellence within the university and nationally (four awards for faculty, three for our students and one for support staff). Fund raising for one endowed chair position in Risk and Trading was very successful and completed. Overall the Risk and Trading Center raised 11.3 million dollars. A Strategic Plan document for our department was completed and faculty voted to complete a Stage I PhD proposal. A program review was initiated and completed in early 2016. The department continues to advance efforts to increase collaboration with other units within the College, major stakeholders and the College of Business.

The department filled four positions, three new positions and one appointment change for the CAPTS director position. The other three positions were in Farm Management, International Trade and a Lecturer to teach DCE courses. The department had two faculty apply to be promoted to Associate Professor with Tenure, with a final decision expected in the 2015/2016 academic year. Our students received top national awards. Our Bison Fund competitors came in first, defeating all Minnesota universities.

a. Teaching
- Our department continues to service all introductory economic courses for the university and the numbers in the courses are increasing.
- Student accomplishment in national competitions have improved significantly with knowledge gained from the CTR. The CTR has also helped increase collaboration with the CBA (e.g., a Portfolio class and Bison Fund).
- Demand continues to be high for the department’s undergraduate and graduate students in terms of job placement and internships.
- Faculty continue to use innovative teaching and assessment methods for face-to-face and online offerings.
- The department continues to have a ratio of produced FTE higher than budgeted FTE.
- Most MS theses result in peer reviewed journal articles and professional presentations.
- Dr. Cheryl Wachenheim received a prestigious Full Bright Award to teach in China.
- Students received several awards; third place in NAMA competition, two “Paul Abrahamson Scholarship” recipients and top place for the Portfolio Management regional competition.

b. Research, Scholarship, and Creative Activities

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c. Service/Outreach/Extension
- Completed a bioenergy conference, David Ripplinger and the Bio Epic Center.
- Extension: Completed Agricultural Lenders Conference.
• Extension: Completed Crop Insurance Conference.
• Completed work on ND Tax Department and ND Agricultural Land Valuation Model.
• Extension: Held more than 217 presentations around the state.
• Dr. Miljkovic: Editor of Journal of International Agricultural Trade and Development.
• Dr. Cheryl Wachenheim served as Managing Editor for IAMA.
• Mr. Tim Petry received an Extension Award for excellence.
• Judy Moe received a North Dakota State award for excellence in service.

d. Goals and Priorities for 2016
• Increase reputation and visibility of the department.
• Increase stability/excellence by continuing fund raising for centers, Burdick Center for Cooperatives and Center for Public Choice and Private Enterprises.
• Complete department's annual assessment report.
• Implement our Strategic Plan document (e.g., initiate a joint MS/MBA with College of Business Administration and joint PhD programs with Math and Transportation Logistics)
• Hire new faculty/staff to replace retirements/resignations.
• Enhance student learning in both undergraduate and graduate programs.
• Organize a retreat to evaluate Program Review Report for 2015.
• Continue to increase/maximize use of the CTR with other programs.
A. Significant Department achievements in research, teaching and outreach during the past year

a. Teaching

- ABEN generated 2373 student credit hours with 4.2 teaching faculty FTE.
- ABEN graduated 27 undergraduate students and 6 graduate students.
- ABEN enrolls 163 undergraduate students and ABEN faculty supervises 31 graduate students.
- ABEN faculty received prestigious awards: Tom Bon-H. Roald and Janet Lund Excellence in Teaching Award, Elton Solseng – Golden Bison Award & William J. and Angelyn A. Austin Excellence in Advising Award, Dean Steele – NACTA Teaching Award of Merit.

Initiatives in teaching: ABEN continue to improve its curriculum based on feedback from employers.

- A new course “Data Management in Precision Agriculture” will be offered in Spring, 2017.
- ASM454/654: Added new topics on UAV and Crop sensors.
- ASM378: Updated curriculum to include specialty crops machinery.
- Acquired instrumentation for a hydraulics lab.
- Developed ASM/NRM/SOIL 264 course lectures based on the new textbook for spring 2015.
- ABEN452/652: Revised curriculum and added new lab equipment (sling psychrometer, anemometer, dual in-duct psychrometers) with funding from ND Grain Dealers Edu.

b. Research/Scholarly/Creative Activities

Major research accomplishments

- ABEN published 43 refereed journal articles, 55 proceedings papers and 35 invited presentations.
- ABEN faculty brought in $3,212,458 M in cumulative grants funding from grant projects.
- ABEN provided national and regional leadership for UAS research and education in agriculture.
- Research to quantify dust emission and characterization of dust in western ND was initiated.
- The impacts of subsurface drainage on spring floods in the Red River basin was quantified.
- ABEN faculty actively participated in professional societies, journal editorial boards, proposal reviews, and conference organization.
- Nurun Nahar & Scott Prior received ASABE Superior Paper Award.

Significant additions to research capability

- ABEN acquired major instrumentation - hydraulic test stations, unmanned aerial systems, sensors.
- ABEN hosted six visiting scholars who significantly contributed to its research capability.

c. Extension/Outreach

New initiatives, innovative extension approaches

- Grain Drying and Storage Education
- The Bio-Industry Summit
- National Extension Disaster Education Network
- Unmanned aircraft system - Applications to crop and livestock management. Collaborated with several NDSU faculty and UAS-related private sector businesses.
- Precision Agriculture – presented NDSU UAS research at Precision Ag Summit, Jamestown, ND.
- Variable Rate Irrigation Training program for the NRCS
- Training Session on Evapotranspiration Mapping
- Publication and videos on “Electric Back-up Sump Pumps for Houses”
  - [ag.ndsu.edu/publications/home-farm/electric-backup-sump-pumps-for-houses](ag.ndsu.edu/publications/home-farm/electric-backup-sump-pumps-for-houses)
  - [youtube.com/watch?v=PPQviRFYtxo](youtube.com/watch?v=PPQviRFYtxo)
Outreach: Several presentations were made by faculty as listed below:

- “Flood-Affected Woody Biomass Utilization” May, 2015 at USDA-ARS, Mandan, ND.
- UAS to monitor crop and livestock at the NDSU Carrington and Williston REC.
- Subsurface Drainage Education, Subsurface Drainage Water Quality, Variable Rate Irrigation

Service

- Provided leadership to UAS Application in Agriculture on behalf of NDSU Agriculture
- ABEN faculty served as chairs or officers in several ASABE committees, multistate project groups, and local and regional committees/groups.
- ABEN faculty served as Co-Chair and committee members for the Precision Agriculture Summit in Jamestown, the Bio-Industry Conference in Fargo, and the Big Iron Show in Fargo
- Board of Directors, Dakota Precision Agriculture Center, Lake Region Community College
- Chair of the ND Electric Utility Workshop Committee

B. Department 2015 Goals and Achievements

1. Address the space needs of the department. Classroom 223 was converted to graduate student space and a smaller classroom. ABEN continues to pursue a lab building called AgTRAC to enhance research and extension education on chemical application, drift, soil-tool interaction and precision ag. A proposal submitted to SBARE has strong support from the ABEN advisory board and alumni.

2. Maintain strong relationship with alumni, employers and stakeholders. Two advisory board meetings in 2015 addressed ABEN needs and updated the group on teaching, research and extension.

3. Organize an annual retreat to evaluate and improve our teaching programs. We addressed course assessment methods and continuous improvement at a summer retreat that provided an opportunity for instructors to learn from each other, discuss program and course-level assessment results, and make decisions continually improve our teaching programs. Our curriculum committees are working to ensure we stay compliant to ABET requirements for program accreditation.

In an effort to improve advising effectiveness, two of our excellent faculty advisors provided advisor training/advising tips to all faculty.

4. Continue to improve student experience, recruiting and retention activities.
   - Implemented a peer-mentoring program with help from Alpha Epsilon, the honor society for ABEN. Mentors and mentees were very satisfied with their experience. Results of this first trial will be presented at the Annual International Meeting of ASABE. The program continued in upcoming years.
   - We continue to include our student club officers to provide a tour of facilities by one of our current students when prospective students visit us.
   - Continued mailing information packet to prospective students, and arranging one of one meeting of prospective students and their parents with our faculty.
   - Our faculty members spoke to student groups at various events organized by NDSU and other groups.

C. Department Challenges for the past year, including narrative on how those are being addressed.

- Transition through the retirement of key faculty to find excellent new faculty members who will enable to the department to continue to provide an outstanding education to undergraduate and graduate students in the ASM and ABEN programs.
- Determine the appropriate blend of the various diverse areas of Agricultural and Biosystems Engineering in the department to have a strong core group to effectively teach and research these areas. Examples include, but are not limited to, Agricultural Safety, Precision Agriculture, Bio-Process Engineering, Power and Machinery, Electrical and Instrumentation, Natural Resources, etc.

D. Department Goals and Priorities for the Coming Year. ABEN decided to wait for the NDSU Agriculture to develop their strategic plans so that the department can align well with those goals.

1. Address the space needs of the department & maximize the effective use of the available space.

2. Establish/maintain strong working relationship with alumni, employers and stakeholders to generate support for ABEN programs and needs.

3. Continuous improvement and strengthening of ABEN teaching programs & student experience.
4. Maintain and grow strong research and extension programs
5. Grow ABEN reputation within NDSU, nationally & internationally.
6. Maintain a productive and collegial environment for personal development & scholarship
7. Begin the process of developing a vision and long-term goals for ABEN department
8. Professional development: Encourage professional development of faculty and staff.
Department of Animal Sciences Annual Report

A. Significant Departmental Achievements in Research, Teaching, and Outreach During the Past Year

a) Teaching: The Veterinary Technology Program achieved a pass rate of 85% on their national licensing examination (national average = 70%). Jordan Schrupp received the Association of Veterinary Technology Educators Rising Star-New Educator Award.

b) Research/Scholarly/Creative Activities: The Meats Laboratory was ranked number two on the SBARE Capital Improvement Projects List. Dr. Larry Reynolds achieved an h-index rating of >50.

c) Extension/Outreach: The department added several scholarship endowments in the past year. These will add to the department’s ability to encourage and reward academic success!

d) Service: Dr. Joel Caton continues as Associate Editor-In-Chief for the Journal of Animal Science. Rob Maddock was elected to the American Meat Science Association Board of Directors. Student and alumni job newsletters were developed to inform students and alumni about job opportunities, internships, scholarships, and academic announcements.

B. Department Goals and Priorities for the Past Year and Progress Toward Those Goals

Overall Departmental Goals
- Engage the Future Directions Committee to examine future needs for the department and use this data for internal and external engagement and funding opportunities.
- Determine whether or not a department advisory board would be beneficial.

Teaching Goals
- Work with faculty in the Veterinary Technology program to continue to address items identified in their AVMA Accreditation Report.
- Review the results of curriculum changes in Animal Sciences. It has been five years since our new curriculum was implemented.

Research Goals
- Work with the AIM Laboratory director to seek additional laboratory space and support for that facility.
- Continue to seek funding for the construction of a new Meats Research Laboratory.

Extension/Outreach Goals
- Seek support for technical support for Extension Specialists in the department.
- Execute a plan to grow the department’s scholarship endowment.

Progress Toward Reaching Goals and Priorities from the Past Year

Overall Departmental Goals
The department’s Future Directions Committee was asked to provide input on future needs in the department and to determine whether a departmental advisory board might be needed. The feedback received from committee members was helpful in developing recommendations for the directors of the Extension Service and Agricultural Experiment Station related to the budget. It also appeared that there was tepid support for a departmental advisory board. More conversation may be needed to determine the reasons why faculty are not more supportive of an advisory board.

Teaching Goals
The department continued to work on issues identified in the AVMA Accreditation Report related to the Veterinary Technology Program. Major highlights for 2015-2016 included: 1) conversations with the Dean and the Director of Facilities Management related to the need for facilities updates, 2) improvements in the pass rate for the national licensing exam (85% pass rate vs. 70% national average in 2015-16).

A curriculum review for the Animal Sciences curriculum was not accomplished in 2015-16.

Research Goals
Conversations continue regarding opportunities for additional space for the AIM Laboratory. Demand for laboratory services remains strong from multiple disciplines and colleges across the university.
The Meats Research Laboratory has been ranked as the number two capital improvement project by the State Board of Agricultural Research and Education for the upcoming legislative session. Strong support exists for this project among the livestock commodity groups in the state. However, the state’s budget situation will play a large role in determining whether or not this is funded in the 2017 legislative session.

Extension/Outreach Goals

Unfortunately, an initiative which would have funded technical support for the Extension specialists in the department was not funded by the Legislature. Support for this initiative among SBARE is lukewarm, and it does not appear to have much traction at this point.

In 2015-2016, the department added a number of additional scholarship endowments, including the Jim and Judy Tilton Scholarship Endowment, the Leland Red Angus Ranch Scholarship Endowment, the Eugene R. Hinsz Animal Husbandry Scholarship Endowment, and the Kenneth and Rachel Kellogg Family Scholarship Endowment.

Other Highlights

Other departmental highlights included: 1) having several faculty win regional and national awards from their scientific societies, 2) having multiple faculty recognized with awards at the college and university level, 3) hosting Sonny Ramaswamy, head of USDA-NIFA, for tours of departmental facilities, and 4) having our student teams compete well on both the regional and national basis.

C. Department Challenges for the Past Year and How Those are Being Addressed

The funding environment for federal grants continues to present significant challenges. Funding rates for federal grants are generally less than 10 percent. Faculty are seeking more commodity group, state agency, and industry support for their work. Many of our facilities (e.g. Meats Laboratory) are aging and in need of replacement. The department has lobbied for construction of a new Meats Laboratory and it is number two on the SBARE priority list. The State of North Dakota's budget challenges in 2016 present significant issues for the department. There is an ongoing need to redirect open positions into new areas in order to meet the evolving needs of our constituents. In addition, enrollment growth over the past six years has led to increases in class sizes and the need to add more laboratories.

D. Department Goals and Priorities for the Coming Year

Goals for 2016-2017

Overall Departmental Goals

- Work with administrators in the College, Experiment Station, and Extension Service to address the budget issues resulting from the allotment process as well as the Governor’s request for a 90% budget.
- Continue work to grow the department’s scholarship endowment fund and investigate opportunities to add endowments which support research endeavors.

Teaching Goals

- Work with faculty in the Veterinary Technology program to continue to address items identified in the AVMA Accreditation Report.
- Ask the department Curriculum Committee to conduct a review of the curriculum changes in the Animal Sciences major and evaluate the options within the major which were implemented in 2010.

Research Goals

- Continue to seek funding for the construction of a new Meats Research Laboratory.
- Review the impact of faculty and technician vacancies on research capacity and implement plans for reassignment or redirection of positions as needed.

Extension/Outreach Goals
• In conjunction with Extension faculty and administration, develop a plan which addresses how to best serve the livestock constituent groups in the state with the budget limitations which currently exist.
A. Significant Departmental achievements during the past year.

a. Teaching.
- Changes made since last report to enhance student learning to achieve the intended student learning outcomes for the curriculum. Several faculty took graduate students to various field days. Departmental faculty delivered at least 5 guest lectures, including one by Knodel to Bismarck State College. Secor used an invited guest lecturer, Dr. Mark Varrelman, University of Göttingen, Germany, to help teach molecular biology of plant viruses. PPTH 324 had a record enrollment that required the addition of a sixth lab section. Volunteer graduate student TAs help the department meet its teaching demand.

- List new initiatives, innovative teaching approaches (providing evidence of quality improvements in teaching and learning and important recognitions. Yan developed and taught a new course Plant Nematology (PPTH 752, 3 credits). Some lectures were in conjuncture with PPTH 758 (Bacterial, Nematode and Viral Diseases of Plants). Yan hosted and taught a class with graduate students visiting from South Dakota State University, Plant Science Department to learn about diseases caused by plant-parasitic nematodes. Meinhard continues compiling assessment data on presentations and qualifying exams for the department. Departmental assessment report was used as a model for assessing graduate education in the College of Math and Science. Pasche and Markell co-instructed PPTH 790, graduate seminar. They implemented significant changes to enhance seminar quality that were well-received.

b. Research/Scholarly/Creative
- Major research accomplishments. Departmental faculty:
  - Published 52 refereed papers in 2015 with at least 18 more “in press” for publication in 2016.
  - Were associated with at least 121 funding lines worth over $29.5 million (in aggregate), $6,134,711 of which is available to the department over the course of the grants. Included in this is an NSF CAREER award made to Dr. Brueggeman.
  - Had other successes outlined in the Appendix.

- Significant additions to research capability
  - Brueggeman developed and improved bioinformatics pipelines that allow us to better analyze next generation sequencing “big data sets”. He also 1) developed script and analysis pipeline to make accurate PCR-GBS calls that improves the data for barley genotyping and 2) established and developed the process of EXOM capture in the lab to rapidly clone genes via the forward genetics barley.
  - Del Rio hosted an international scholar from Brazil.
  - Friskop and Markell hired new technicians.
  - Research labs for Gudmestad, Yan and Zhong were remodeled.
  - Yan established a new molecular and applied research program on plant parasitic nematodes.

c. Extension/Outreach
Markell lead the SCN Signature Program and coordinated a field day for approximately 50 undergraduate students from two two-year colleges in North Dakota; students are actively recruited to join NDSU for a four-year degree or graduate school. He gave 23 media interviews. Markell and Friskop co-lead The Eastern Crop Pest Management Scout School, a two-day course designed to improve knowledge base of industry professionals in multiple disciplines. He provided over 30 media interviews. Knodel initiated a project on pollinator gardening. Khan arranged 12 sugarbeet plot tours in the region. He organized and participated in 10 segments of a sugarbeet radio program. He also coordinated activities of the ISBI. Departmental faculty collectively gave at least 147 combined Extension/outreach talks stakeholders in the state. The Plant Diagnostic Lab processed a record number of samples. Dr. Kinzer, Director of the lab, left the university in January for a faculty job at the University of Idaho. Jesse Ostrander did an excellent job filling in as the Interim Director.

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d. Service. Brueggeman served on two NSF grant panels (April and October) for Division of Integrative Organismal Systems in the Biology Directorate Symbiosis Defense and Self Recognition. Del Rio served as Chair of APS Biological Control committee and on NDSU Faculty Senate: co-Chair of Academic Affairs committee. Gudmestad was panel manager for a USDA-NIFA-SCRI RFA on Huanglongbing (HLB), an invasive disease of citrus. Khan chaired the college PTE committee. Knodel was member of three committees for the 8th International IPM Symposium in Salt Lake City, Utah. These were: Steering Committee, Awards Committee and Media/Outreach Committee. Liu served as chair of APS Molecular and Cellular Phytopathology committee was a member of APS Host Genetics committee. Markell was Chair of APS Extension Committee. He also chaired and was lead organizer for APS Rust Symposium
Program Committee. He was chair of NDSU University Athletics Committee and panel member for USDA – NIFA panel on Hispanic-serving institutions education grants program. He chaired and organized national Sunflower Pathology Working Group Annual Meeting (held in Pasadena, CA). Pasche chaired national Pulse Crop Working Group. Yan was elected to be the Chair of 2016 North Central-1197 Nematology Committee. She is member of the APS Nematology Committee. Zhong was Committee Chair for Durum Coordinated Project of the US wheat and Barley Scab Initiative and was a member of four APS committees (Genetics, Mycology, Host Resistance and Molecular and Cellular Phytopathology). Secor was chair of NDSU Greenhouse Operations Committee and chaired the APS Editorial Board project, “Focus on Potato”.

B. Department Goals and Priorities for the past year, including narrative about progress toward those goals. The department maintained a high-level of graduate students, which is critical to the health of the department; approximately ½ are Ph.D. students. Faculty did an excellent job meeting the research and outreach needs of the stakeholders.

C. Department Challenges for the past year, including narrative on how those are being addressed. The department was sad to lose the services of Drs. LeBoldus, who left for an opportunity at Oregon State, and Acevedo, who left for an opportunity with the Bill and Melinda Gates Foundation. These vacancies will help Ag Administration meet budget reductions imposed by the legislature in 2016. Nonetheless, the loss of faculty is expected to have a significant impact on graduate and service course curriculum moving forward.
a. Significant departmental achievements in research, teaching and outreach during the past year

a. Teaching

Plans were finalized and paperwork was submitted to update the Horticulture undergraduate program. Changes included consolidation of the Sports and Urban Turfgrass Management (SUTM) undergraduate program as an option under the Horticulture major beginning fall 2016. Enrollment in the Crop and Weed Sciences undergraduate program reached a new record enrollment in fall 2015. The Food Science undergraduate program was ranked as the “Best Value Food Science Degree” by College Values online.

b. Research/Scholarly/Creative Activities

In 2015, 51% of the potato acres eligible for certification by the North Dakota State Seed Department were planted to cultivars developed by the NDSU potato breeding program with an annual crop value of $22 million. North Dakota is the second largest producer of seed potatoes, second only to Idaho.

Wheat variety surveys are done annually by the USDA-NASS. In their 2015 survey, varieties developed by this project were seeded on over 50% of ND’s 6.3 million acres of hard red spring wheat (HRSW). Three recent releases from NDSU, Barlow, Elgin, and Prosper were sown on 12.6%, 10.8%, and 10.5% of ND’s HRSW acres.

The NDSU Woody Plant Breeding program has introduced 55 superior woody plants for production and sale with increased disease tolerance and winter hardiness for landscapes throughout the Northern Great Plains. Furthermore, woody plant introductions from the program are currently being propagated for sale by commercial wholesale firms in Australia, Canada, and England. Two new introductions, Lavaburst™ Ohio Buckeye and September Flare™ Sugar Maple were released in 2015.

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c. Extension/Outreach

Based on data provided by NDSU Extension, 88% of ND seed potato growers indicated they changed the way they manage seed potato production to prevent glyphosate damage. Changes made include communicating with neighbors and pesticide applicators, using a dedicated sprayer for use on potatoes only, and planting border crops.

The newly developed NDSU Dry Bean weed control program uses micro herbicide rates to control annual weeds, which has increased yields up to 42% and resulted in an increased income of $95 million to regional growers.

d. Service

Dr. Chiwon Lee was the recipient of the Open Door Award at the NDSU Ag Week.

Dr. Michael Christoffers was the recipient of the NDSU Academic Advising Award.

Dr. Andy Robinson was the recipient of the Spudman Emerging Leader Award.

Drs. Tom Peters, Andy Robinson, and Richard Zollinger were part of a group from NDSU that were recipients of the 2015 Extension and Education Committee Award for Newsletter - North Dakota State University Crop and Pest Report.
b. Department goals and priorities for the past year, including narrative about progress toward those goals.

**New teaching lab.** Construction is progressing with the users of the space having major input on the design of the new classroom. Teaching in the lab will begin in the 2016 fall semester. The new teaching lab in Loftsgard will provide our students with the same new teaching technologies available in the STEM building and access to greenhouse space in Waldron Hall that is connected by a skywalk.

c. Department challenges for the past year, including narrative on how those are being addressed.

**Harris Hall.** The research and teaching facilities in Harris Hall are in disrepair and it is not cost-effective to make most repairs or renovations. A new durum wheat mill was purchased, but it cannot be moved into the building without dismantling a doorframe and wall. Ash and odor from the ash ovens are taken up by the ventilation system and deposited throughout the building. Waterflow into some labs has not worked since 2002, making the labs unusable. Additionally, piping is not present to carry distilled water to labs, so it is delivered with buckets from the still in the 3rd-floor men’s restroom.

d. Department goals and priorities for the coming year

**Complete the process of eliminating Sports and Urban Turfgrass Management as a stand-alone major.** Work with the breeding and genetics group in the department to update the curriculum and teaching assignments. Currently, we have no one assigned to teach cytogenetics and population genetics, and we have a new faculty member starting in July 2016 that does not have an assigned course to teach.

**Continue to develop a plan to update the Plant Sciences Learning Center.** The Plant Sciences Learning Center is the only space on campus that is specifically set up for a department’s undergraduate students to work and study either in groups or individually for multiple classes.
School of Natural Resource Sciences Annual Report

A. Significant Departmental achievements in research, teaching and outreach during the past year

a. Teaching

- Changes made since last report to enhance student learning to achieve the intended student learning outcomes for the curriculum.
  1) New common learning outcomes (LOs) for all four SNRS disciplines were implemented in 2015.
  2) Soil Science, NRM, and Range Science develop LOs specific to their programs.
  3) NRM implemented a portfolio process for BS students to assess student retention of LOs.

b. Research/Scholarly/Creative Activities

- Major research accomplishments
  - Since 2012, there has been an increase in all types of disseminations, including peer-reviewed articles (74 in 2015), abstracts to national/international meetings (176 in 2015), research reports (50 in 2015), popular press articles (25 in 2015), and reviewed extension publications (10 in 2015). In 2015, the average number of published peer-reviewed papers per faculty was 3.5 (median = 3), which is excellent.
  - In 2015, there was $2,628,100 in funded proposals, which has increased over the previous two years. The number of successful proposals has also increased over the past four years, where in 2015 there were 92 successful proposals, up from 65 in 2014. In 2015, the average funds awarded to individual SNRS faculty was $119,459 (median = $80,342) as their portion of the grants, with a range of $1,334 to $605,401. Also, in 2015, the average number of funded proposals by individual SNRS faculty members as PI or co-PI was 4.2 (median = 3.5). These granting activities indicate the faculty of the SNRS are very active in writing successful proposal and the number of grant submission continues to grow.

- Significant additions to research capability
  - Interdisciplinary research projects within the School are becoming much more common since the inception of the SNRS. In 2015, some of the first products of interdisciplinary research in the School have resulted in 2 peer-reviewed publications. Also, in 2015, interdisciplinary activities resulted in 22 abstracts/conference presentation co-authored by SNRS faculty from different disciplines.
  - The granting activities also indicate that interdisciplinary synergies have become common across the SNRS disciplines. There were eight (8) interdisciplinary proposals funded in 2015, totaling $632,975. These proposals were submitted by 31 PIs/co-Pis from different SNRS disciplines, which include studies on (i) soil salinity and soybean pests, (ii) road dust impacts on soybeans, (iii) land-use practices and endangered insect habitat, and (iv) brine spill reclamation.

c. Extension/Outreach

- List new initiatives, innovative extension approaches
  - Since 2012, extension faculty have increased productivity through the programs they plan and deliver. In 2015, extension faculty planned 37 programs with 3227 people attending. They also educated through 85 presentations to 8301 attendees, and through 63 media interactions. There were at least 11,528 face-to-face interactions with people attending conferences and talks by SNRS extension personnel.
  - A significant change in extension programming has been the focus on small venues, and meeting with influential, but invested producers. This approach, dubbed Café Talks, has been very successful in imparting practices that improve soil health in this region.

d. Service

- Summarize state, national, or international professional service activities over the past year that are most noteworthy
National reputation of SNRS faculty has increased significantly through time. Two examples of increased reputations are the number of requests to serve on journal editorial boards and to review peer-reviewed manuscripts. Those serving on editorial boards went from 6 in 2012 to 13 in 2015. Manuscripts reviews went from 75 in 2012 to 194 in 2015.

B. Department Goals and Priorities for the past year, including narrative about progress toward those goals.

1) Form bylaws for remaining SNRS committees;
   - Bylaws were defined for (i) faculty meetings, (ii) Curriculum and Assessment committee, and (iii) Graduate Committee
2) Identify opportunities to meet needs of stakeholders impacted by oil and gas;
   - There are multiple examples of faculty from across the SNRS disciplines collaborating to address issues such as dust impacts on agriculture, remediating brine and fluid spills, pipeline reclamation, and reclaiming prime farmland impacted by oil spills.
3) Look for means to recruit and maintain high quality graduate students.
   - Recruitment is a large challenge for the SNRS disciplines, and little has been accomplished for this goal.

C. Department Challenges for the past year, including narrative on how those are being addressed.

1) Facilities in the SNRS are a challenge, where some laboratories are gravely outdated and inadequate, especially in Walster Hall.
2) The School is housed across five buildings on campus, posing major challenges to the development of interdisciplinary synergies. Facilitating more interdisciplinary research/teaching synergies can and has improved these difficulties.
3) Increasing representation of female faculty at all ranks. Composition of search committees, job descriptions and recruitment should be considered carefully.
4) Special attention should be given to undergraduate and graduate enrollments for all SNRS disciplines in forthcoming years. Some special initiatives have already begun to attract majors, especially in NRM, such as adding a "sustainability emphasis," redeveloping the NRM webpage, implementing a stakeholder survey, and developing an NRM advisory committee.
5) 4% budget allotment and the impending 90% budget will pose major challenges. Critically identifying core needs to fulfill the NDAES mission.

D. Department Goals and Priorities for the Coming Year

1) Weathering the impending 90% budget
2) Continue to define the SNRS structure (e.g. program lead definition)
3) Successful onboarding and orientation of new Soil Health Assistant Professor
4) Student recruitment and retention at undergraduate and graduate levels
A. **Significant Departmental achievements in research, teaching and outreach during the past year.**

B. **Department Goals and Priorities for the past year, including narrative about progress toward those goals.**

Priorities for this past year included successful transition to the STEM building for some sections of MICR 202. The move was successful. The Department voted for a name change from Veterinary and Microbiological Sciences to Microbiological Sciences effective August 22, 2016. There is an ongoing effort to revamp the department’s graduate program, particularly the PhD degree. Although not complete, significant progress has been made.

C. **Department Challenges for the past year, including narrative on how those are being addressed.**

The biggest challenge for the department in 2015 has been the continued loss of personnel. A permanent Department Head has not been hired yet, and the position previously held by Dr. Nathan Fisher continues to be open. In addition, Ms. Jess Ebert separated from the department. Ms. Ebert previously taught Scientific writing, Microbial Ecology and MICR 202L. Finally, one technician spot remains unfilled. In a department of this size, that loss of faculty and staff creates significant strains on teaching and research.

VMS continues to experience space needs as well, however that may be alleviated in the near future if the Department can obtain some of the space vacated by the Veterinary Diagnostic Laboratory.

D. **Department Goals and Priorities for the Coming Year**

Complete the reconfiguration of the graduate program and state on the undergraduate program.

Develop a more consistent assessment process.

It should be noted that Dr. Gene Berry was on sabbatical during 2015, Dr. Jane Schuh had a temporary appointment as Dean of Business College, Jess Ebert took an unpaid leave of absence and Dawn Daerkott retired from her long held technician position due to health reasons. Therefore, it would be a goal of the department to return FTEs to level that allows normal function of the unit.
Department of Veterinary Diagnostic Services Annual Report

Significant Departmental achievements in research, teaching and outreach during the past year

Teaching

- Dr. Dyer joined the first cohort of the Gateways ND teaching project
- Dr. Dyer instructed ANSC 370, 399, 378, VMS 756

Research/Scholarly/Creative Activities

- The VDL authored four grants (Dyer, Mostrom, Webb) totaling $322,270. These grants were focused on wheat scab research, IT capacity, and specialty testing as part of a national animal health diagnostic network.

Extension/Outreach

- The VDL annual CE event took place the third week in May, 2015.
- The VDL had booth space at the NDVMA and NDSA meetings in August and September respectively

Service

- The VDL is a service unit which serves the state of North Dakota and upper Midwest through animal disease casework and interaction with clientele. For the 2015 Calendar year, the VDL processed 11,900+ cases.

Department Goals and Priorities for the past year, including narrative about progress toward those goals.

A significant portion of this year (August through December) was spent in the design of the new VDL to be completed in the summer of 2017. This effort involved a tremendous amount of time on the part of everyone in the laboratory, and was the number one priority for the VDL. The design was successfully completed and construction has begun. In addition, initial conversations were begun regarding the upcoming accreditation visit (5 year cycle) by our accrediting body, The American Association of Veterinary Laboratory Diagnosticians.

Department Challenges for the past year, including narrative on how those are being addressed.

Staffing continues to be a challenge and we are investigating new ways to fund technical positions (cooperative agreements, grants, fee income, etc.). Space problems should be alleviated in the new VDL. As we move into this transition period between the old facility and the new, it is hoped that many of our previous stress points will be fixed.

Department Goals and Priorities for the Coming Year

Priorities for the coming year include: 1) construction of the new Veterinary Diagnostic Laboratory, 2) continue funding for IT and QA personnel in a way that we are not dependent upon collections income 3) refining VDL operations, particular in QA with an eye to the upcoming audit in a year and IT regarding dissemination of results to lab clientele.
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<td>Economic Development of ND through UAS Research and Education in Agriculture</td>
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<td>North Dakota Grain Dealers Association</td>
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<td>Auburn University/ NASA HQ</td>
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<td>New, Mechanical, Thermal, and Storage Characteristics of Biomass</td>
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<td>Energy Beets: A New Industrial Sugar Source</td>
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<td>USDA/ARS</td>
<td>New, Phenocam application in LTAR project. Specific Cooperative Agreement between USDA-ARS and NDSU</td>
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<td>Flood Affected Wood Biomass Utilization Opportunities in North Dakota</td>
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<td>NASA/ROSES-U of New Hampshire</td>
<td>Satellite Enhanced Snowmelt Flood Predictions</td>
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<td>Managing water for increased resiliency of drained agricultural landscapes</td>
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<td>New, Impact of drainage water management and subirrigation</td>
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<td>Growth and fresh yield responses of sweet corn to mulch, planting date, and hybrid</td>
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<td>Improving Corn Growth and Production with Clear Mulch</td>
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<td>Subirrigation with high sodium adsorption ratio groundwater and its effect on soil and water quality</td>
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<td>Effect of optimal water management for sustainable and profitable crop production and improvement of water quality in Red River Valley</td>
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<td>Reducing sodification in high risk northern Great Plains Soils</td>
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<td>Soil health and water quality impacts of growing energy beets for advanced biofuel production in marginal land of Upper Midwest and its consequences on water sustainability in a changing climate</td>
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<td>A model of groundwater allocation and management at the Bakken shale in western ND</td>
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<td>Nowatzki, John</td>
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<td>Delineation of Chlorosis in Soybean Fields Using Unmanned Aerial Systems</td>
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<td>Evaluation of remote sensing technology to detect and map Rhizoctonia in sugarbeet</td>
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<td>Evaluation of Remote Sensing Technology to Detect and Map Rhizoctonia in Sugar Beet</td>
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<td>Using Sensors to identify weed infestations in cropland</td>
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<td>UAS/ Precision Agriculture applications to soybean management</td>
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**Active New Grants (n = 33; $745,790)**


Berg, E.L., C.J. Hammer, A. Bach-Gorman. PATH Intl. Equine Specialist in Mental Health and Learning Workshop and Skills Test to expand knowledge and implementation of equine facilitated psychotherapy models at NDSU. Amer. Quarter Horse Foundation. $10,440. 5/5/15-9/30/16.


Crosswhite, M.R. Effects of pre-breeding administration of injectable trace mineral supplements on subsequent reproductive performance in beef herds. USDA-NIFA/NCR-SARE. $10,000. 9/1/15-8/31/17.

Dahlen, C.R., J.S. Caton, and K. McLean. Fetal and placental development through the first trimester. State Board of Agricultural Research and Education. $6,298. 12/1/15-11/30/16.


Maddock, R.J. Cochrane program for Chile-U.S. meat export policy and trade. USDA-Foreign Ag Service. $31,703. 10/9/15-9/4/16.

Maddock Carlin, K.R. Effect of implant strategy and supplementation of zilpaterol hydrochloride on aged beef skeletal muscle proteome from beef stages aged up to 14 days. Nat’l Cattlemen’s Beef Assn. $40,250. 1/1/15-10/31/16.

Meehan, M.A. Little Missouri River Tributaries Assessment Project Phase II. North Dakota Department of Health. $86,874. 5/1/15-6/30/17.


Newman, D.J. Research support agreement: acquisition of goods and services. USDA Ag Res. Service. $11,000. 7/1/15-6/30/16.


Stokka, G.L., K. Swanson, and J. Gaspers. Evaluation of the impact of vaccination on intakes, the acute phase response and antibody titers of weaned beef calves. $5,000. 2015. 1 year.


Vonnahme, K. Potential for new pregnancy test. ND Dept. of Ag and ND Dairy Coalition. $3,716. 9/1/15-7/31/16.

Vonnahme, K. Potential for new pregnancy test, ND Ag Products Utilization Commission. $47,924. 8/31/15-8/1/16.


Vonnahme, K. The role of giant trophoblast cells in beef cow pregnancy. ND SBARE. $6,481. 2/4/15-6/30/16.

Vonnahme, K. Genetic and epigenetic factors that most influence ewe lifetime production and product quality. USDA-ARS. $16,480. 9/16/15-9/14/18.

**Active Continuing Research Projects (n = 30; $3,025,453)**


Berg, E.P. Establish a short course to train students in basic meat animal harvest and processing. NDSU Development Foundation. $20,000. 5/9/11-5/8/21.

Caton, J.S. Countering nutritionally induced intrauterine growth restrictions with VEGF gene therapy: Impacts on fetal developmental outcomes. USDA-NIFA-AFRI. $150,000. 5/1/12-4/30/15.


Crouse, M. and J.S. Caton. Maternal nutrition and embryonic survival: Nutrient transport to the embryo during day 16 to 50 of gestation. SBARE. $7,495. 3/1/15-5/30/16.

Dahlen, C.R. Evaluating the sustainability of beef cattle breeding system. USDA-NIFA/NCR-SARE. $199,995. 1/1/13-12/31/16.

Dahlen, C.R. Evaluation the sustainability of beef cattle breeding systems. USDA NCE-SARE. NDSU $22,875. 1/1/13-12/31/16.

Dahlen, C.R. 2012 North Dakota beef industry survey: yesterday, today and into the future. $10,000. 5/1/13-4/30/15.

Dahlen, C.R. and B.W. Neville. Impact of pre-breeding vaccination with modified-live or inactivated viral vaccines on subsequent reproductive indices and abortions. Zoetis. $32,000. 5/15/14-6/30/17.

Dahlen, C.R. and B.W. Neville. Impact of pre-breeding vaccination with modified-live or inactivated viral vaccines on subsequent reproductive indices and abortions. Zoetis. $32,000. 4/1/13-4/30/16.


Grazul-Bilska, A.T. and D.A. Redmer. Role of the nitric oxide (NO) system in ovarian function. USDA-AFRI. $393,108. 1/1/12-12/31/16.

Maddock, R.J. Renewal on the Standing Rock Reservation. USDA. $997,479. 1/1/11-2/14/17.

Maddock Carlin, K.R. The effects of growth promotant technologies on tenderness variation within a beef retail cut. ND SBARE. $3,292. 4/30/14-6/30/15.


Newman, D.J. Acquisition of goods and services. USDA-ARS. $35,750. 7/1/14-6/30/15.


Park, C.S. Canola and human health. ND Agricultural Products Utilization Commission. $50,000. 8/1/14-7/31/15.

Redden, R.R. 2014 producer education mini-grant application. ND Corn Council. $500. 7/1/14-6/30/15.


Wagner, S.A. Behavioral methods to evaluate the analgesic effects of non-steroidal therapy in lame dairy cows. Zoetis. $141,750. 5/15/14-12/31/16.

Other Funding (n = 18; $392,470)


Dahlen, C.R. and K.C. Swanson. Use of electronic monitoring systems for precision management of cow/calf and cattle feeding enterprises. ND Ag. Exp. Station Precision Ag Grant Program. $95,890. 11/1/15. 3 years.


Dyer, NW. Epidemiology and laboratory capacity (West Nile virus surveillance). Centers for Disease Control and Prevention/ND Department of Health. $34,073. 8/1/14-7/31/15.

Grazul-Bilska, A.T. Acquisition of high resolution camera to ECLIPSE microscopy. NDSU Provost and Academic Affairs. $4,124. 1 year.


Meehan, M.A., F. Brummer, K.K. Sedivec, and J.L. Printz. North Dakota Grazing Monitoring Sticks. Total amount = $2,600 (ND Grazing Lands Coalition $500, Bowman-Slope Soil Conservation District $1,050, McKenzie County Soil Conservation $250, Morton County Soil Conservation District $800).

Newman, D.J. Evaluating degree of doneness and cut thickness of pork loins. ND Pork Council. $4,000. 1 year.

Newman, D.J. NDSU BBQ Boot Camp. ND Beef Commission. $5,000. 1 year.

Newman, D.J. NDSU BBQ Boot Camp. ND Pork Council. $4,000. 1 year.

Newman, D.J. NDSU BBQ Boot Camp. Turkey Federation. $2,500. 1 year.

Newman, D.J. NDSU BBQ Boot Camp. Northern Canola Growers Association. $1,000. 1 year.

Stokka, G.L. Product for use by Beef Unit and Beef Cattle Research Center. $2,500 value. Zoetis. 2015. 1 year.
Plant Pathology Department Grants and Contracts

Listing of active grants and contracts. (If listed, numbers in parentheses are dollar amount directed to Department of Plant Pathology. Otherwise, entire grant came to the department.)

Acevedo, M., Pasche, J., Markell, S., and Osorno, J. Rust-proofing dry edible beans for the Northern Great Plains via pre-breeding and breeding efforts - North Dakota Department of Agriculture - Specialty Crop Block. $91,561.


Brueggeman R. National Science Foundation-CAREER, $623,363
Brueggeman R. NSF-ND EPSCoR, 16,017
Brueggeman R. USDA-ARS USWBSI, $67,172
Brueggeman R. North Dakota Barley Council, $11,359
Brueggeman R. SBARE, $15,597
Brueggeman R. American Malting Barley Association, $24,480
Brueggeman R. USDA-ARS, $100,000


del Rio, L.E. Evaluation of seed treatments for control of blackleg. Valent Corp. $7,000.

del Rio, L.E. Developing an integrated management program for blackleg: Identification of avirulence genes of Leptosphaeria maculans and blackleg resistance genes in commercial canola cultivars. USDA-CSREES. $69,400 ($69,400).

del Rio, L.E. et al. Improving resistance to Sclerotinia sclerotiorum in spring canola. USDA-ARS Sclerotinia Initiative. $81,474 ($0).

Dubcovsky, J., Muehlbauer, G, Steffenson, B … and Zhong, S. Triticeae-CAP. USDA-NIFA. $5,000,000 ($88,013).

Friesen T. and Brueggeman R. Montana Wheat and Barley Commission, $32,000
Friesen, T.L. and Liu, Z.H. USDA-NIFA-AFR. $472,400 ($322,083).
Friskop, A. Corn Pathology Program - North Dakota State Board of Agricultural Research and Education $25,000.
Friskop, A. Developing a Corn Plant Pathology Program at NDSU. North Dakota Corn Council. $30,000.
Thompson, A. and Gudmestad - NC. Development of multipurpose potato cultivars with enhanced quality, disease and pest resistance - USDA-NIFA - $29,000.

Gudmestad, NC. Support of irrigated potato research in North Dakota in 2015 - Northern Plains Potato Growers Association. $48,000.

Gudmestad, NC. Screening of cultivars for susceptibility to PMTV-induced tuber necrosis - USDA/AMS/ND Dept Ag. $48,915.


Gudmestad, NC. Metam Sodium Control of Verticillium Wilt in High OM and Fine-Textured Soils - MN Area II - $30,000.

Gudmestad, NC and Secor, GA. Evaluation of BASF foliar fungicides - BASF - $43,144.


Gudmestad, NC. Evaluation of fluxapyroxad foliar fungicide in the laboratory - BASF - $14,616.

Gudmestad, NC. Biological and economic impacts of emerging potato tuber necrotic viruses and the development of comprehensive and sustainable management practices - USDA/NIFA/Cornell University - $119,610.

Gudmestad, NC. Subcontract UMN - $5,000.

Gudmestad, NC. Gifts and grants from various agricultural companies - $195,498.

Khan, M. Sugarbeet extension programs and program maintenance. Sugarbeet Research and Education Board of Minnesota and North Dakota. $95,205.

Khan, M. Improving disease management and agronomic practices of sugarbeet. Sugarbeet Research and Education Board of Minnesota and North Dakota. $70,000.

Khan, M. Evaluating fungicides for controlling diseases of sugarbeet. Gift funds from chemical and sugar companies. $193,517.

Khan, M. Sensitivity of Rhizoctonia solani to fungicides. Western Sugar Cooperative. $25,000.


Knodel, J., J. Ransom, and M. Boetel. Evaluation of Bt traits in Corn Hybrids for Control of Corn Rootworm in ND, North Dakota Corn Utilization Council. $29,510 ($27,510).


Knodel, J. and P. Beauzay. EIPM-CS Program in North Dakota, USDA NIFA - ND EIPM Coordination Grant. $187,500.

Knodel, J. 2015 Wheat Pest Survey in North Dakota, North Dakota Department of Agriculture. $9,500 (9,500).


Rasmussen, J.B. Support of Wheat Disease Forecasting System. Bayer CropScience. $10,000.

Szczepaniec, A., J.P. Michaud, and J. Knodel. Efficacy and Economics of Insecticide Seed Treatments for Management of Wireworms and Seed Corn Maggots in Sunflowers, National Sunflower Association. $34,867 ($9,820).


Knodel, J. Potato Biodirect Colorado Potato Beetle Formulation Trial, Monsanto $10,080.

Liu, Z.H. USDA-NIFA-AFRI $150,000.
Liu, Z.H. and M. Mergoum. ND State Board of Agriculture Research and Education and ND Wheat Commission. $31,200.
Liu, Z.H. ND Wheat Commission. $28,500.
Liu, ZH. ND Wheat Commission. $20,500.
Liu, ZH. Monsanto. $5,670.
Liu, Z.H. NDSU Provost Office. $2,646.
Markell, S. Evaluation of new, generic and pre-mixed fungicides for management of rust on susceptible and moderately resistant hybrids – National Sunflower Association. $10,000.
Markell, S. Monitoring for fungicide resistance development and pathogen race changes in the downy mildew pathogen, Plasmopara halstedii – National Sunflower Association. $13,360.
Markell, S. Evaluation of novel fungicides- BASF. $34,398.
Markell, S. Monitoring for fungicide resistance development and pathogen race changes in the downy mildew pathogen, Plasmopara halstedii – State Board of Agriculture Research and Education. $6,515.
Mathew, F., Malvick, D., Byamukama, E., Kleinjan, J., and Osboure, L. Evaluate an integrated approach (seed treatments + host genetics) for management of sudden death syndrome and soybean cyst nematode on soybeans. – South Dakota Soybean Research and Promotion Council. $0
Mathew, F., Markell, S., and Harveson, R. Evaluation of an integrated management approach (fungicides + genetics) for management of Phomopsis stem canker on sunflowers – National Sunflower Association. $40,000 ($12,000).
Nelson, B.D., Jr. and Juan Osorno and Sam Markell. USDA Specialty Crop Block Grant. Soybean cyst nematode outreach and characterization of the genetic basis for resistance. $100,000.
Nelson, B.D., Jr. and Julie Pasche. USDA Specialty Crop Block Grant. Effect of soybean cyst nematode on root disease of dry bean caused by fungi. $110,299.

Pasche, J.S. Post-Doctoral Support for Research on Root Rot of Field Pea Northern Pulse Growers Association. $18,500.


Pasche, J.S. and Markell, S.G. Dry Edible Beans Disease Research Northarvest Bean Growers. $64,524.


Pasche, J.S. Post-Doctoral Support for Research on Root Rot of Field Pea Northern Pulse Growers Association. $18,500.


Pasche, J.S. and Markell, S.G. Dry Edible Beans Disease Research Northarvest Bean Growers. $64,524.

Pasche, J.S. Post-Doctoral Support for Research on Root Rot of Field Pea Northern Pulse Growers Association. $18,500.


Pasche, J.S. and Markell, S.G. Dry Edible Beans Disease Research Northarvest Bean Growers. $64,524. ($12,800).


Pasche, J.S. and Ramana-Chapara, V. Efficacy of In-Furrow Fungicide Applications for the Control of Fusarium Root Rot in Field Peas Northern Pulse Growers Association. $13,628 (10,725).

Pasche, J.S. and Markell, S.G. Evaluating In-Furrow Fungicide Applications for the Management of Root Rot in Field Peas and Dry Edible Beans North Dakota Department of Agriculture - Crop Protection Product Harmonization and Registration Board. $20,013 (14,829).


Pasche, J., Yan, G. P., Simons, K., and Zitnick-Anderson. Identification of pathogen, soil and plant factors important to root rot development in field pea, funded by USDA/AMS/ND Department of Agriculture. $148,221.

Qi. L., and Markell, S. Development of super confection sunflower effectively resistant to downy mildew and rust – North Dakota Department of Agriculture - Specialty Crop Block Grant. $96,380 ($64,480).

Yan, G. P. Developing a qPCR assay to determine population densities of root-lesion nematodes (Pratylenchus penetrans) in soils to be planted to potato. $20,000.
Yan, G. P. Assay sugarbeet samples from fields with sand syndrome for detecting plant-parasitic nematodes, funded by American Crystal Sugar Company. $2,000.

Yan, G. P. Screening wheat varieties for resistance to root-lesion nematode (Pratylenchus neglectus) in North Dakota, funded by State Board of Agricultural Research & Education and North Dakota Wheat Commission. $29,500.

Yan, G. P., Berti, M., and Markell, S. Screening cover crops to reduce soybean cyst nematode in infested field, funded by North Dakota Soybean Council. $29,900.

Yan, G. P., Friskop, A., and Ransom, J. Plant-parasitic nematodes on corn in North Dakota and evaluation of corn varieties for resistance to nematodes, funded by State Board of Agricultural Research & Education and North Dakota Corn Council. $28,610.

Yan, G. P. and Markell, S. Monitoring virulence changing of soybean cyst nematode in North Dakota, funded by North Dakota Soybean Council. $31,650.


Zhong, S. DON accumulation in PI 344467 during FHB infection. ND Wheat Commission. $20,000.

Zhong, S. Use of novel Fusarium head blight resistance sources in durum and spring wheat. ND Wheat Commission. $30,000.

Zhong, S. Screening of spring wheat lines from Monsanto for Fusarium head blight resistance Monsanto. $5,443.


Zhong, S., Mergoum, M., Glover, K. and Anderson, J. Increase FHB resistance screening capacity and efficiency for spring wheat breeding programs. USDA Scab initiative. $12,440.


Zhong, S., Yan, C. and Shen, G. Develop bioinformatics pipelines for dual RNA-seq analysis of plant-pathogen interactions. NDSU Bioinformatics Seed Grant Program. $39,318 ($17,070).
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<td>Seeding Rates, and Plant and Stem Density as Tools</td>
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<td>Cai, Xiwen</td>
<td>Identification and Characterization of Host Resistance Genes from Wheat-Related Species for Fusarium Head Blight, Stem Rust, and Hessian Fly</td>
<td>Cai, X., Xu, S.</td>
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<td>Cai, X., Chao, S., Dvorak, J.</td>
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<td>Introgression of New Stem Rust Genes from Thinopyrum Species into Wheat</td>
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<td>Transferring Sclerotinia Resistance Genes from Wild Helianthus Species into Cultivated Sunflower</td>
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Osorno, Juan

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6,799,407.21
## School of Natural Resource Sciences Grants

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**Total Value** $7,046,120.85
Listing of active grants and contracts (Investigators, funding agency, total value)

**John McEvoy**  

Revealing Cryptosporidium diversity: Linking genetic variation to parasite biology. Czech Science Foundation. $210,000 (approximately). Collaborator. I had significant intellectual input to this proposal. In accordance with the conditions of the funding agency, as a collaborator outside the Czech Republic, I cannot receive funding from this project. However, I will benefit indirectly from the project by faculty and student exchanges between NDSU and the Academy of Science of the Czech Republic / University of South Bohemia.

**Birgit Pruess**  
Elucidation of environmental factors that influence attachment of foodborne pathogens to biotic and abiotic surfaces  
USDA/AFRI  
Principal Investigator: Teresa Bergholz; Co-PI: Birgit M. Prüß  
Amount: $ 122,486  
Award period: Dec 2014 to 2016  
Pilot study to the development of novel biofilm inhibiting materials to be used in food processing  
North Dakota Center of Commerce, APUC  
Principal Investigator: Birgit M. Prüß; Co-PI: Shane Stafslien  
Amount: $ 76,140  
Award period: Sep 2014 to Aug 2015  
Improvement of novel biofilm inhibiting materials and application in food processing  
North Dakota Center of Commerce, APUC  
Principal Investigator: Birgit M. Prüß; Co-PI: Shane Stafslien  
Amount: $ 74,787  
Award period: Dec 2015 to Nov 2016

**Peter Bergholz**  


**Teresa Bergholz**  
"Optimization of pasteurization conditions for flaxseed safety and quality" funded by ND Agricultural Products Utilization Commission, Basic and Applied Research Program. January 2015 to April 2016. PI, Clifford Hall III, co-PI Teresa Bergholz. $54,183 total, $24,238 to TMB.  
"Elucidation of environmental factors that influence attachment of foodborne pathogens to biotic and abiotic surfaces" funded by USDA AFRI Food Safety Foundational Program. January 2015 to January 2017. PI, Teresa Bergholz, co-PI Birgit Pruess. $135,343 total, $122,486 to TMB.
“Implementing inquiry-driven assessments of microbial diversity in undergraduate laboratory courses” funded by the Academic Section of the Association of Public Land-Grant Universities, September 2014 to August 2015. PI, Teresa Bergholz, Co-Pls Janice Haggart, Shana Peterman, Emily Lutgen. $2,000

“Role of cell envelope stress responses in Listeria monocytogenes transmission” funded by NDSU COBRE, July 2014 to June 2015. PI Teresa Bergholz. $45,000


“Evaluation of methods for detection of Shiga toxin producing E. coli and Salmonella enteric from inoculated cattle fecal samples, retail meat, and fresh produce” funded by a Cooperative Sponsorship Agreement with the USDA-ARS. September 2013 to August 2016. PI Teresa Bergholz, co-Pl Wellin Shelver. $20,000 total, $20,000 to TMB.
The VDL authored four grants (Dyer, Mostrom, Webb) totaling $322,270. These grants were focused on wheat scab research, IT capacity, and specialty testing as part of a national animal health diagnostic network.
Department of Agribusiness and Applied Economics Publications

Research, Scholarship, and Creative Activities

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Service/Outreach/Extension

- Completed a bioenergy conference, David Ripplinger and the Bio Epic Center.
- Extension: Completed Agricultural Lenders Conference.
- Extension: Completed Crop Insurance Conference.
- Completed work on ND Tax Department and ND Agricultural Land Valuation Model.
- Extension: Held more than 217 presentations around the state.
- Dr. Miljkovic: Editor of Journal of International Agricultural Trade and Development.
- Dr. Cheryl Wachenheim served as Managing Editor for IAM.
- Mr. Tim Petry received an Extension Award for excellence.
- Judy Moe received a North Dakota State award for excellence in service.

2015 Journal Articles (published/accepted)


• Wamisho, Kassu, David Ripplinger and Aaron De Laporre. 2015. Costs of joint production of ethanol and industrial sugar juice suing energy beets in the Northern Plains of the United States. Biofuels, Bioproducts and Biorefining. Vol. 9, Iss. 6 pgs. 749-759.


• Zenebe, Addisalem, Kassu Wamisho and E. Wesley F. Peterson. 2015. Journal of International Agricultural Trade and Development. Vol. 9, Iss. 2, pp 165-188.

• Zhang, Lei, Tammy Leonard and James Murdoch. Time and Distance Heterogeneity in the Neighborhood Spillover Effects of Foreclosed Properties. Housing Studies. DOI: 10.1080/02673037.2015.1070794.

• 2015 Book Chapters


2015 Departmental Reports

- 2015 No. 747
  *Economic Effects of the Air National Guard on the Fargo-Moorhead Metropolitan Area*, Bangsund, Dean A., Nancy M. Hodur

- 2015 No. 746
  Contribution of the Pulse Crop Industry to the Economies of North Dakota and Eastern Montana, Coon, Randal C., Frayne Olson, Dean A. Bangsund, Nancy M. Hodur

- 2015 No. 745
  *Initial Assessment of the Agricultural Risk of Temporary Water Storage for FM Diversion*, Bangsund, Dean A., Saleem Shaik, David M. Saxowsky, Nancy M. Hodur

- 2015 No. 744

- 2015 No. 743

- 2015 No. 742
  *Service Population Estimates for City of Williston*, Hodur, Nancy M., Dean A. Bangsund

- 2015 No. 741

- 2015 No. 740
  *Results of the North Dakota Land Valuation Model for the 2015 Agricultural Real Estate Assessment*, Aakre, Dwight G., Ronald Haugen

- 2015 No. 739

- 2015 No. 738

- 2015 No. 737
  Valuing Switching Options in International Grain Marketing, Johansen, Stephan, William Wilson, Bruce Dahl

- 2015 No. 736
  *Petroleum Industry’s Economic Contribution to North Dakota in 2013*, Bangsund, Dean A., Nancy M. Hodur
Department of Agricultural & Biosystems Engineering Publications

Referred journal articles published


**Abstracts**

**Proceedings papers**


9. Bora, G. Sensors Characteristics for Variable Rate Technology Based on tree canopy in Grape Vines. Precision AG Action Summit, James Town, ND


Books


Kenneth Hellevang

- 3 Steps to take now to be sure your stored grain is okay, www.farmprogress.com, Nov 10, 2015
- Keep Stored Grain Cool and Dry to Extend Storage, Feb 20, 2015, cropwatch.unl.edu
- Handle with Care, North Dakota Soybean Grower magazine, Sep 3
- Optimize Dryer Operation to Quickly Move Grain to Storage, Jul 24
- When Grain Heats Up - Time to Monitor Stored Grain Temps, DTN/The Progressive Farmer, Mar 5
- Natural-Air Drying of Sunflower - Some Timely Reminders, National Sunflower Magazine, Aug 8
- Soybean Seed Damage Reduces Yields - Mechanical damage to soybean seeds during planting can translate into yield reductions at harvest, Farm Journal Magazine, Jun 28
- Check Bins regularly in the summer, Jul 12, www.iowafarmertoday.com
- Consider Pros, Cons of Alternative Grain Storage Methods, Aug 25, cropwatch.unl.edu
- Consider Pros, Cons of Alternative Grain Storage Methods, Sep 30, Manitoba Cooperator.ca
- The Evolution of Grain Storage, Jan 14, www.northernmag.net

Thomas Scherer


John Nowatzki

Reviewed Extension publications


https://www.ag.ndsu.edu/publications/landing-pages/home-farm/backup-sump-pumps-ae-1771/

Videos

Nowatzki, J. Energy Efficiency Videos (Video completed; Editing in progress)

- Tractor Fuel System Maintenance
- Sizing Tractors for the Job
- Impact of Tires on Fuel Efficiency
- Tillage Systems Affect Fuel Use

Hellevang, K. “Electric Back-up Sump Pumps for Houses”

- https://www.youtube.com/watch?v=PPQvjRFVtxo

Webinars

Ken Hellevang:

- Grain Storage Management, 1 hr., Ag Days, Sidney, MT, Jan 16, 30 participants
- Post-harvest considerations for malt barley, 30 min, 2015 Empire State Producers Expo, Syracuse, NY, Jan 22, 60 participants
- Low Temperature Drying for High Quality Seed Production, 1.0 hr., Ontario Seed Growers’ Association Field Day, Palmerston, ON, 75 people, June 30

Software

Apps

Awards (State, Regional, National, International)

1. Bon, T. 2015. H. Roald and Janet Lund Excellence in Teaching Award. NDSU Agriculture and Extension Faculty/Staff Awards Program.
5. Solseng, E. Golden Bison Award during the NDSU 2015 Ag Week Banquet. Mr. Solseng “has been teaching at NDSU for over 30 years and has inspired thousands of students over his long career. By volunteering his time to clubs and organizations both inside and outside of his program, Solseng further develops students as leaders and contributors to society and the agriculture industry.”
6. Solseng, E., 2015. William J. and Angelyn A. Austin Excellence in Advising Award. NDSU Agriculture and Extension Faculty/Staff Awards Program.
7. Steele, D., Teaching Award of Merit, North American Colleges and Teachers of Agriculture. 4/1/2015.

National or International Invited Presentations

5. Hellevang, K. “Aspects of Successful Storage of Diverse Crops” 55-minutes, Diversity Direction Dollars program, Dickinson, January 5, 125 participants
6. Hellevang, K. Crop Storage Management Tips for 2015, 30 minutes, Lake Region Round-Up, Devils Lake, Jan 7, 50 participants
7. Hellevang, K. Grain Storage Management, 1 hr., Ag Days, Sidney, MT, Jan 16, 30 participants
8. Hellevang, K. Post-harvest considerations for malt barley, 30 min, 2015 Empire State Producers Expo, Syracuse, NY, Jan 22, 60 participants
9. Hellevang, K. Drying Small Grains, 1 hr., West Winfield, NY, Feb 3, 55 people
10. Hellevang, K. Grain Storage Management, 1 hr., West Winfield, NY, Feb 3, 55 people
11. Hellevang, K. Storage management of wheat and malting barley, 1 hr., Small Grain Congress, Batavia, NY, Feb 4, 225 people
12. Hellevang, K. Storage management of wheat and malting barley, 1 hr., Small Grain Congress, Waterloo, NY, Feb 5, 225 people
13. Hellevang, K. Safeguarding the fruits of your labors: Post-harvest considerations for small grains, 1.5 hr., Cornell University Cooperative Extension Regional Hudson Valley Value-Added Grain Systems School, Leeds, NY, Feb 6, 65 people
14. Hellevang, K. Grain Drying, Storage and Handling Tips, 1.0 hr., Crop Connect Conference, Winnipeg, Manitoba, Feb 17, 95 people
15. Hellevang, K. Successfully Drying and Storing Sunflower, 1.0 hr., Crop Connect Conference, Winnipeg, Manitoba, Feb 17, 65 people
16. Hellevang, K. NDSU Extension Energy Education, Guest Lecture ABEN 444, 1 hr., March 13, 8 students
17. Hellevang, K. Harvest, Drying and Storage Management, 1 hr., SDSU Western Precision Agriculture Conference, Sioux Falls, SD, March 17, 15 people
18. Hellevang, K. Harvest, Drying and Storage Management, 1 hr., SDSU Western Precision Agriculture Conference, Sioux Falls, SD, March 18, 12 people
19. Hellevang, K. High-temperature grain dryers and associated processes, 2.5 hr. webinar, Agroterra, Moscow, Russia, March 24, 12 people
20. Hellevang, K. Ambient air drying, 2.5 hr. webinar, Agroterra, Moscow, Russia, March 25, 12 people
21. Hellevang, K. Measuring energy efficiency and comparing dryers, 2.5 hr. webinar, Agroterra, Moscow, Russia, March 26, 12 people
22. Hellevang, K. Storage technology and management, 2.5 hr. webinar, Agroterra, Moscow, Russia, March 27, 12 people
23. Hellevang, K. Grain Storage Management, 1.0 hr., Towner County Ag Day, Egeland, March 31, 45 people
24. Hellevang, K. Natural Air and Low Temperature Drying in New York, 1.5 hrs., A.N. Martin Systems, Clyde, NY, April 2, 95 people
26. Hellevang, K. Low Temperature Drying for High Quality Seed Production, 1.0 hr., Ontario Seed Growers' Association Field Day, Palmerston, ON, 75 people, June 30
27. Hellevang, K. Efficient grain dryer operation and critical maintenance, 1.0 hr., Minnesota Grain and Feed Association Operations, Maintenance and Safety Workshop, Willmar, MN, July 15, 25 people
28. Hellevang, K. Grain storage management and grain storage issues, 1.0 hr., Northland Farm Business Management, Moorhead, MN, July 16, 80 people
29. Hellevang, K. Malt Barley Drying and Storage, 1.0 hr., NDSU Barley Institute, Fargo, July 22, 10
32. Simsek, H., Selçuk University, June 2015, Konya, Turkey. ~ 60 participants were present. Invited speaker
33. Simsek, H., Namik Kemal University, June 2015, Tekirdağ, Turkey About 80 participants were present. Invited speaker Simsek, H., Balikesir University, June 2015, Balikesir, Turkey. ~60 participants. Invited speaker
Publications and Presentations

Refereed Journal Articles Published (n = 31), Other (n = 2)


Other Items in Refereed Journals


Journal Articles Accepted or in Press


Park C., K.B. Cho, L. Mabasa, W.S. Choi, C.L. Crane, and M.R. Almeida. 2015. In utero exposure to lipotropic (methyl) nutrients suppresses mammary carcinogenesis in two generations of offspring. EACR/AACR SIC Special Conference 146. Florence, Italy. 2015.


Sun, X., J. Young, J. Liu, L. Bachmeier, and D. Newman. 2015. Predicting pork two tone color grade using image color features and support vector machine. 68th AMSA-RMC. Lincoln. NE.


Abstracts Accepted or In Press

Alkhuriji, M. S. Vetter, K.C. Swanson, and E.P. Berg. 2016. Evaluation of glycated albumin as a metabolic marker for marbline in


Proceedings Papers


National or International Invited Presentations


Park, C.S. In utero exposure to lipotropic (methyl) nutrients suppresses mammary carcinogenesis in two generations of offspring. EACR/AACR SIC Special Conference 146. Florence Italy. 6/20/15-6/23/15.


Books


Book Chapters


Research Reports


Maddock, R.J. and K. Beauchamp. 2015. Annual report to USDA-NIFA on project “Renewal on Standing Rock.”


**Popular Press/Non-Refereed Publications**


Berg, E.P. Muscle foods should be a focus, not a footnote. The North Dakota Stockman. April 2015.


Berg, E.P. AMSA 68th RMC symposium to address implications of growing social interest in how meat is produced in the U.S. National Provisioner Online. 4/17/15.

Berg, E.P. New Meat Mythcrusher video addresses misconceptions about red meat and obesity. Beef Online. 10/13/15.

Berg, E.P. While red meat consumption declines, obesity rates rise. Southern Farmer. 10/14/15.


Berg, E.P. While red meat consumption declines, obesity rates rise. Dakota Farmer. 10/15/15.


Berg, E.P. While red meat consumption declines, obesity rates rise. California Farmer. 10/19/15.

Berg, E.P. While red meat consumption declines, obesity rates rise. Indiana Farmer. 10/19/15.


Dahlen, C. Forage, technology, and comparing the beef and dairy industries. Building the Bakken. 3/2/15.

Dahlen, C. Ready or not, we’re calving. NDSU Ag Communications news release. 3/12/15.

Dahlen, C. Dry lot breeding management studied. Napoleon Homestead, Wishek Star, and Ashley Tribune. 3/16/15.

Dahlen, C. Calf losses before birth a concern. NDSU Ag Communications news release. 3/24/15.


Dahlen, C. Maximize pregnancy rates when using artificial insemination. NDSU Ag Communications news release.

Dahlen, C. Beef cattle breeding season. Agri-View Reporter. 7/14/15.

Dahlen, C. Fall pasture bloat. Beef Magazine. 7/16/15.

Dahlen, C. Cattle management for successful breeding seasons. ND Farm Credit Services Update. 7/22/15.


Dahlen, C.R. Publication roundup: August. The Ranch Hand. August 2015. Pg. 6


Dahlen, C. Fall checklist for producers: Do I need “crop” insurance for cows and calves. The Ranch Hand. September 2015. Pg. 4-5


Dahlen, C. Using distiller’s grains in seedstock operations. ND Ethanol Council. 9/8/15.

Dahlen, C. NDSU Equipment Demonstration Days set. NDSU Ag Communications news release. 9/16/15.


Dahlen, C. Fall is time to get cattle ready for winter. NDSU Ag Communications news release.


Dahlen, C. Heifer retention patterns. Farm and Ranch Guide. 12/7/15.


Lardy, G. Quality and quantity of water critical for health of livestock. Tri-State Livestock News. 2/19/15.


Lardy, G. Distillers grains a valuable ingredient in finishing rations. ND Stockman Magazine. August 2015.
Lardy, G. Distillers grains provides key benefits in backgrounding rations. ND Stockman Magazine. September 2015.


Meehan, M. President's message: Summer. Society for Range Management Young Professional Conclave Newsletter. October 2015; Pg. 1


Meehan, M. Research leading to riparian improvements. 2015 Annual Highlights, NDSU AES and NDSU Extension Service.


Reynolds, L. Dr. Mike Smith receives 2015 Casida Award. Taking Stock. 7/23/15.


Reviewed Extension Publications


Videos (n = 10), Webinars (n = 2), Software (n = 0), Apps (n = 0)

Dahlen, C.R. Video. Ditch hay pilot project results. Prepared for Extension agents to present to their clientele.

Dahlen, C.R. Video. Setting calves up for weaning. Published at CattleDocs website for producer reference.


Stokka, G.L. Video. The Veterinary Feed Directive. Prepared for presentation at producer meetings.

Stokka, G.L. Webinar. Stocking the medicine room. Prepared and presented at Fall Extension Conference. 10/14/15.

**Awards (State, Regional, National, International)**

Dahlen, C.R. NDSU Extension Program Excellence Award for 2015 for project “Evaluating the sustainability of beef cattle breeding systems.”

Eck, T. 2015 Great Plains Region Rodeo Coach of the Year from National Collegiate Rodeo Association.

Grazul-Bilska, A.T. Outstanding and Recognized Reviewer, awarded by Elsevier Publishing.

Hammer, C.J. Honorary State FFA degree from North Dakota Future Farmers of America.

Reynolds, L.P. H-index rating of 52. September 2015.

Schrupp, J.L. Association of Veterinary Technology Educators (AVTE) Rising Star-New Educator Award. 8/1/15.
Publications and presentations

1. Refereed Journal articles


2. Abstracts


Calles Torrez, V., J.J. Knodel, M.A. Boetel, B.W. French, and B.W. Fuller. 2015. Screening for corn rootworm (Coleoptera: Chrysomelidae) resistance to transgenic Bt corn in North Dakota. Entomological Society of America meeting, Minneapolis, MN.


Khan, M. F. R. 2015. How to combine basic and applied research in plant protection to make an impact on farmers lives. Agronomy Society of America Annual Meeting, Minneapolis.


Wallner, A., Knudson, A. H., D. Rider and J. Knodel. 2015. A key to the Neotropical Genera (in part) of Tingidae (Hemiptera; Heteroptera). Entomological Society of America meeting, 15-18 Nov. 2015, Minneapolis, MN.


3. Proceedings papers


4. National or International Invited Presentations


Del Rio, L. Epidemiology of Sclerotinia stem rot of canola. Invited seminar to University of Nebraska, Lincoln, NE. April 17, 2015.


Khan, M. F. R. Strategies to manage resistance in a crop developed to tolerate one mode of action of herbicide and planted continuously over a large area. International Institute for Beet Research, Frauenkirchen, Austria, September 10-11, 2015.


Khan, M. F. R. Taking the University to the people. APS North Central Annual Meeting, Lansing, MI, June 10-11.


Secor, G.A. Late Blight Management in Field and Storage, and Dickeya – Be Aware. Ontario Potato Conference. Guelph, ON. March 5, 2015.


Zhong, S. Department of Plant Pathology, Warsaw University of Life Sciences (SGGW), Warsaw, Poland. Title: Molecular mechanisms of plant-fungus interactions in cereal crops. March 5, 2015.


5. Books


Book Chapters


7. Research Reports


8. Popular Press articles


9. Reviewed Extension publications

Bailey, W., C. DiFonzo, E. Hodgson, T. Hunt, K. Jarvi, B. Jensen, J. Knodel, R. Koch, C. Krupke, B. McCormack, A. Michel, J. Peterson, B. Potter, A. Szczepaniak, K. Tilmon, J. Tooker and S. Zukoff. 2015. The effectiveness of neonicotinoid seed treatments in soybeans. E-268 Joint publication of: Iowa State University, Kansas State University, University of Nebraska — Lincoln, North Dakota State University, Michigan State University, University of Minnesota, University of Missouri, Ohio State University, Penn State University, Purdue University, South Dakota State University and University of Wisconsin. 8 pp. Online only:


Markell, S. Approximately 55 articles (Rasmussen’s estimate) for NDSU Extension Crop and Pest Reports articles.


10. Videos

11. Webinars

12. Software
Nothing to report.

13. Apps
Knodel provided entomology information and annual updates for the NDSU Extension Service Pest Management Pesticide App

III. Awards (State, Regional, National, International)

Friskop, Markel and Knodel were part of a team to win 2015 American Society of Agronomy Extension and Education Community Award for Newsletter. Gudmestad won Distinguished Service to Agriculture Award from Gamma Sigma Delta Honor Society and the Lifetime Achievement Award from the World Potato Congress. He was named Fellow of American Phytopathological Society. Gudmestad and Secor both were made Honorary Life Member of the Potato Association of America. Khan won the International Service Award from Epsilon Sigma Phi Upsilon. Knodel won the 2015 Mid-Career Service Award, Epsilon Sigma Phi Upsilon. Pasche won the Lorraine Elvrum Murphy Faculty International Award, presented by the NDSU Office of Equity, Diversity and Global Outreach.
Department of Plant Sciences Publications

II. Publications and presentations

1. Refereed Journal Articles

**Berti**


**Cai**

**Carena**


**Chen**

**Deckard**
My contributions to these manuscripts were not huge, involving discussion regarding methods and interpretation of results.


**Elias**


Gramig


Hall

Hatterman-Valenti


Helms

Horsley


Howatt

Johnson

Kandel


Lee


Li, Deying

Li, X.


Lym

Manthey


Marois


McClean


McGinnis

Osorno


Rahman

Ransom


Robinson


Schwarz

Shetty


Simsek


**Thompson**


**West**


This manuscript is from an undergraduate research project which Nathan presented a research poster at the 2014 annual American Society for Horticultural Science meeting and won 1st place for undergraduate research poster competition.

**Zollinger**


2. Abstracts

**Cai**


Elias


Gramig


Non-refereed – not reviewed outside of NDSU

Hatterman-Valenti


Howatt


Johnson


Kandel


Manthey


McClean


McGinnis

Osorno


Rahman M. 2015. Nine years canola breeding from scratch at North Dakota State University. An abstract for 14th International Rapeseed Congress, July 5-9, 2015, at Saskatoon, Canada (Poster).


Ransom


Thompson

Sabba, RP, AL Thompson, JS Pasche, R Taylor, and NC Gudmestad. 2015. Adoption of a real-time PCR-based strategy for the quantification of Verticillium dahliae in potato stems for the breeding of Verticillium wilt resistance at North Dakota State University. 98th Annual Meeting of the Potato Association of America, Spokane, WA. Am J Potato Res 92:205. (Abstract).


West


Zhang


Zollinger


3. Proceedings/papers

Berti

Kandel
Lee


Peters


Robinson


Robinson, Andrew P. Residual effects of Rejuvenate on potato seed for stem management. Potato Expo. 7-9 Jan 2015. Orlando, FL.

4. National or International Invited Presentations/Other Presentations

Berti


Johnson, B.L., B.K. Hanson, A. Hermann, M.T. Berti, and P.J. Petersen. Screening industrial hemp (Cannabis sativa L.) varieties for adaptation in North Dakota. 27th Annual Meeting of the Association for the Advancement of Industrial Crops (AAIC), Lubbock, TX, 18-22 Oct. 2015.


Cai
Genetic engineering for crop improvement (invited), Huazhong Agricultural University, China, May 31, 2015.

Carena
Carena, M.J. 2015. Developing the Next Generation of Short-Season Products and Methods. April 13, 2015 (Invitation by Director of Business and Relationships at Foundation of Arable Research, New Zealand).

Christoffers


Deckard


Introduction to College Teaching. NDSU College of Engineering (invited), March 26, 2015.

Agriculture Issues in United States. Henan Institute of Science and Technology, Xinxiang City, China, June 30, 2015.

Agricultural Research in United States. Institute of Cotton Research of CAAS, Anyang, China, July 2, 2015.

World Agriculture/Food Security. Ten two-hour lectures to 300 undergraduate students at China Agriculture University, Beijing, China, July 4 to July 10. 2015.

North Dakota Agriculture. Presentation to new International Students, Department of Communication (invited), July 21. 2014.

Gramig


Hall

Poster


Hatterman-Valenti
January, Effects of hail on mid-season and late-season potatoes, NCIS, Morton, MN invited.

January, Weed science research update for high-value crops, Wild World of Weeds, Fargo, ND invited.

February, Grape growing for the novice North Dakota Grape and Wine Association annual meeting, Bismarck, ND invited.

February, Glyphosate drift to Red Norland potatoes: a producer and seed grower perspective, NPPGA and MN Area II Reporting Conference, Grand Forks, ND invited.

March, The Northern Grape Project, Nebraska Grape and Wine Association Meeting, Omaha, NE invited.

April, Growing large-diameter onion, Spring Fever Extension Video-conference, Fargo, ND invited.

April, Grape growing for the novice, Garden Saturday, Bismarck, ND invited.

July, Small fruit field research update, NDSU Horticulture field day, Fargo, ND invited.

September, High-value crops field research update, NDSU Horticulture field day, Absaraka, ND invited.

August, How to implement balanced pruning in grapes, ND Horticulture Society annual meeting, Absaraka, ND invited.

September, Understanding grape quality parameters for winegrapes, NDGWA Vine to Dine, Bismarck, ND invited.

October, North Dakota small fruit and grape research, NC222 annual meeting, Auburn, AL invited.

November, North Dakota NE1020 variety trial update and other grape research, Rapid City, SD invited.

November, Results and implications of an eight-year study of grape production in North Dakota, Vitinord: International Cold Climate Viticulture Meeting, Nebraska City, NE invited.

Helms
I spoke at the Casselton Agronomy Seed Farm field day on July 13, 2015 as an invited speaker.
Howatt
January 10. Control of troublesome weeds in soybean. Crop Advisor Workshop. Fargo, ND. invited
March 19. Weed control in North Dakota and Minnesota, panel discussion. Central Crop Consultants. Fargo, ND. invited
March 27. Science careers in agriculture. School visit day. Hunter, ND. invited
July 16. Weed science update and new herbicide discussion. Field Day. Langdon, ND. invited
September 15. New seed technologies and troublesome weeds in soybean. Unity Seeds, Fargo, ND. Invited

Johnson
Johnson, B.L. 2015. Industrial hemp research in North Dakota. NDSU Fall Extension Workshop. Bismarck, ND. (invited)
Johnson, B.L. 2015. Industrial hemp trials. Langdon REC field day July 16, 2015. (invited)
Johnson, B.L. 2015. Campus plot tour of continuous wheat and flax plots and hail research in conjunction with New Agronomy
Greenhouse and Horticultural Garden tours for the Pioneer Hi-Bred Northern Division Research Associates. This tour was hosted by Julie

Kalb
March 23, 24, 30 and 31. Spring Fever Garden Forums. This educator hosted 15 presentations on a wide range of gardening topics.
On March 30, this educator presented Japanese Beetle in North Dakota. Presentations were delivered to 44 Extension offices and
online across the state.
April 17, 18. Dakota Garden Expo. This educator hosted 35 presentations on a wide range of gardening topics. Presentations were
made by this educator on Getting Started With Square-Foot Gardening, Growing Tomatoes in North Dakota, Growing Apples and
November 13. Starting a Backyard Orchard and Ten Steps to a Fantastic Vegetable Garden. Master Gardener Training. Fargo and
approximately 10 counties across the state.

Kandel
-Alternative Specialty Oil Crop Production Update. Central Dakota Ag Day, Carrington REC, December 17, 11-11:30 a.m. [37].
-Soybean Research and Production Update. Extension Annual Fall conference, October 14, 3:30-4 p.m. [16].
-Subsurface water management. Extension Annual Fall conference, October 13, 8:30-9 a.m. [22].
-Subsurface drainage and its potential to be used as an alternative or in addition to water management practices involving flood
protection for Fargo. Ellingson Drainage 45th anniversary celebration, Harwood. October 2, 1:15-1:45 p.m. [45].
-Soybean variety selection. Steele County plot tour. September 21, 5:30-6:0 p.m. [17].
-Soybean production update and Variety Selection with emphasis on SCN. Richland County SCN plot Tour Hankinson. September 11,
10:30-10:50 a.m. [21].
-Soybean production update and Variety Selection with emphasis on SCN. Traill County SCN plot Tour Galesburg. September 9, 10:30-
10:50 a.m. [17].
-Soybean production update. Corn and Soybean Plot tour, Ransom County Crop Improvement Association, Sept 8, 5:30-6 p.m. [31].
-Soybean production update and Variety Selection with emphasis on SCN. Cass County SCN plot Tour Abersaraka. September 4, 10:30-
10:50 a.m. [26].
-Selection of Soybean Varieties. Carrington Row Crop Tour. September 3, 5-5:15 and 6:30-6:45p.m. [64].
-Estimating Sunflower Yield. Hands on training in the field. Carrington REC. September 3, 2:30-3 p.m. [17].
-Bolts and Nuts about the 2015 Sunflower Survey. NSA training session at Carrington REC September 3, 12:30-1 p.m. [17].
-Soybean production update. Corn and Soybean Plot tour, Richland County Crop Improvement Association, Sept 2, 5-5:40 p.m. [31].
-Agronomic Benefits of Tile Drainage. Groundwater management workshop for county extension agents, Langdon REC, August 26,
11:10-12 noon. [12].
Soybean production update. Corn and Soybean Plot tour, Sargent County Crop Improvement Association, August 25, 5-5:40 p.m. [23].

Broad Leaf Crops in ND. 2015 NCIS Crop-Hail School. Fargo campus, August 11, 8:45-9:30 a.m. [74].

Agronomic and Economic Considerations for Tile Drainage, Tile Design Workshop, Grand Forks, March 11, 8-9 a.m. [65].

Growth Stages for Canola. Eastern Crop Scout School. Seven Seas, Mandan March 3, 2-3:30 p.m. [105].

Sunflower and Canola Production. Eastern Crop Scout School. Seven Seas, Mandan March 3, 1:30-2 p.m. [105].

Growth Stages for Soybean. Western Crop Scout School. Seven Seas, Mandan March 3, 10:30-noon [105].

Growth Stages for Canola. Eastern Crop Scout School. Fargo Dome, Fargo, February 26. 2-3:30 p.m. [110].

Sunflower and Canola Production. Eastern Crop Scout School. Fargo Dome, Fargo, February 25, 1:30-2 p.m. [110].


Dry Bean Seeding Rates and Nitrogen Study Update. International Crops Expo, Alerus, Grand Forks, February 19, 9:40-10:10 a.m. [78].

Opportunities and Challenges in Soybean Production 15th Annual MonDak Pulse Plus Day Williston, February 17, 9-9:30 a.m. [61].

Water Management, Hitting the Sweet Spot. Sugar beet Grower meeting, Wahpeton, February 12, 10-10:30 a.m. [95].

Water Management, Hitting the Sweet Spot. Sugar beet Grower meeting, Holiday Inn, Fargo, February 11, 10-10:30 a.m. [125].

Water Management, Hitting the Sweet Spot. Sugar beet Grower meeting, Alerus, Grand Forks, February 10, 10-10:30 a.m. [195].

Do Soybeans Need N Fertilizer? Best of the Best in Wheat and Soybean Research. Alerus Center Grand Forks, February 5 2:30-3 p.m. [246].

Water Management, Hitting the Sweet Spot. Sugar beet Grower meeting, Grafton Parish, February 5, 10-10:30 a.m. [99].

Do Soybeans Need N Fertilizer? Best of the Best in Wheat and Soybean Research. Courtyard by Marriott, Moorhead. February 4 2:30-3 p.m. [175].

Managing water in crop production. Sargent County Crop Improvement Association, Havana, February, 3, 9-10:30 a.m. [5].

Production Opportunities in Soybean. Getting it Right Workshop. Portage La Prairie, January 30, 9-9:45 a.m. [188].

Update on nitrogen fertilization in dry bean. Dry Bean Day, Fargo, January 16, 11:20-11:40 a.m. [275].

Optimizing Variety Selection in Soybean. Getting it Right Workshop. Minot, January 15, 1-2 p.m. [80].

Optimizing Variety Selection in Soybean. Getting it Right Workshop. Newburg, January 15, 10-11 a.m. [46].

Optimizing Variety Selection in Soybean. Getting it Right Workshop. Underwood, January 14, 10-11 a.m. [34].

Optimizing Variety Selection in Soybean. Getting it Right Workshop. Streeter, January 13, 10-11 a.m. [26].

Crop Management. Training for Crop Advisors. Loftsgard hall. January 9, 2-3 p.m. [22].

Tile drainage to optimize crop yields; managing the water table. Lake Region Extension Roundup, Devils Lake. January 6, 11 to noon. [53].

I was invited to speak to a foreign groups and events in Canada. Number between [155 for 2015] indicates number of participants.

- Why Tile, Agronomical Benefits. Convention Center, Yorkton, Saskatchewan. December 9, 2015. 3:30-4:30 p.m. [52].
- Why Tile, Agronomical Benefits. Heritage Inn, Taber, Alberta. December 9, 2015. 9-10 a.m. [26].
- Why Tile, Agronomical Benefits. Lacombe Memorial Center, Lacombe, Alberta. December 11, 2015. 9 a.m. [65].
- Why Tile, Agronomical Benefits. Best Western Hotel Leduc, Alberta. December 7, 2015. 3–4 p.m. [25].

Lee
January 15, 2015. Presented a workshop on vegetable seedling grafting, Minnesota Fruit and Vegetable Growers Association annual conference, St. Cloud, MN.

January 15, 2015. Presented a workshop on tree fruit grafting, Minnesota Fruit and Vegetable Growers Association annual conference, St. Cloud, MN.

July 14, 2015. Presented a talk on NDSU vegetable research during the field day at Carrington Research and Extension Center.

Li, Deying


Lym
Attended and gave one presentation at the North Dakota Weed Control annual meeting. “Japanese knotweed may be in your county”. 8 Jan. 15. Invited.
Attended and gave two presentations Wild World of Weeds in Fargo on 20 Jan 15. “North Dakota’s newest invader, Japanese knotweed” and “Invasive weed ID” a hands-on live plant educational format.

Represented North Dakota State University attended annually the NCERA-192 (NCERA-221).

Marais


Mohamed Somo, Roshan Sharma Poudel, Seyed Pirseyedi, Xiwen Cai, Shiaoamn Chao and Francois Marais. Molecular mapping of three recombined versions of the Lr56/Yr38 translocation in wheat. ASA, CSSA, and SSSA Meeting, November 18, 2015, Minneapolis Convention Center.

S.M. Pirseyedi, M. Somo, R. Sharma Poudel, X. Cai, B. McCallum, B. Saville, T. Fetch, S. Chao and F. Marais. Lr59-151 – A modified version of the Lr59 full length translocation. ASA, CSSA, and SSSA Meeting, November 18, 2015, Minneapolis Convention Center.

McClean

Phenotypic and Molecular Analysis of the Transition to Type II Growth Habit in Common Bean. Bean Improvement Cooperative Biennial Meeting. Niagara Falls, Canada. November 2, 2015. INVITED

McGinnis

(Includes number in the audience in brackets and length of talk in parentheses).

Pollinator Gardens for ND. Grand Forks Horticulture Society Meeting, Grand Forks, ND, Nov. 21, 2015 [51], (1:15), (invited).

Pollinator Gardens for ND. Prairie Rose Garden Club, Jamestown, ND, Oct. 13, 2015 [15], (45 min.), (invited).


Exciting New Annuals and Perennials. Fargo Public Library, Fargo, ND, May 19, 2015 [33], (50 min.), (invited).

Master Gardener Program. PEO International Meeting, Fargo, ND, May 11, 2015 [19], (30 min.), (invited).

Hardy Ornamental Grasses. Cashman Nurseries, Bismarck, ND, May 2, 2015 [15], (30 min.), (invited).


Exciting New Annuals and Perennials for 2015. Cass County Association of Retired Teachers, Fargo, ND, April 9 [55], (35 min.), (invited).

Perennials for All Seasons (Talk I). West Otter Tail County Garden Day, Fergus Falls, MN, March 28, 2015 [38], (50 min.), (invited).

Perennials for All Seasons (Talk II). West Otter Tail County Garden Day, Fergus Falls, MN, March 28, 2015 [43], (50 min.), (invited).

Lawn Care 101. Keynote Speaker, Tessman's Turf Academy, Bismarck, ND, March 3, 2015 [18], (50 min.), (invited).


Using Distance Learning to Grow a Master Gardener Program. National Extension Master Gardener Coordinator Webinar, January 21, 2015 [17], (40 min.), (invited).

Submitted oral presentations – only those not listed in 2B.

Pollinator Gardens for ND. NDSU Extension Fall Conference, Bismarck, ND, Oct. 13, 2015 [20], (45 min.).

Perennial Hardiness Trials. NDSU Horticulture Field Day, Absaroka, ND, Sept. 26, 2015 [50], (15 min.).


Tour of NDSU Horticultural Research and Display Garden. Pioneer Hi-Bred Regional Meeting, Fargo, ND, Aug. 26, 2015 [40], (30 min.).

Succulent Planting Demonstration. NDSU Yard and Garden Field Day, Fargo, ND, July 21, 2015 [30], (25 min.).

Perennial Hardiness Trials. NDSU Yard and Garden Field Day, Fargo, ND, July 21, 2015 [12], (20 min.).

Common Problems with Potatoes and Tomatoes. Williston Research and Extension Center, Williston, ND, July 9, 2015 [25], (1:00).

Common Problems with Potatoes and Tomatoes. Dickinson Research and Extension Center, Dickinson, ND, July 8, 2015 [21], (30 min.).
The Science Behind Home Garden Remedies. Dickinson Research and Extension Center, Dickinson, ND, July 8, 2015 [21], (30 min.).


Designing with Annuals. Dakota Garden Expo, Bismarck, ND, April 18, 2015 [50], (45 min.).

Science Behind Home Garden Remedies. Dakota Garden Expo, Bismarck, ND, April 18, 2015 [10], (25 min.).

Perennials for All Seasons. Dakota Garden Expo, Bismarck, ND, April 18, 2015 [35], (45 min.).

Ornamental Grasses for ND. Grand Forks Gardening Saturday, April 11, 2015 [60], (50 min.).

Common Problems in Tomatoes, Potatoes, Peppers and Eggplants. Grand Forks Gardening Saturday, April 11, 2015 [70], (1:00).

Spotted Wing Drosophila. NDSU Extension Spring Fever Garden Forum, Fargo, ND, March 30, 2015 [30 in-person, unknown number online], (10 min.).

Edible Landscaping. NDSU Extension Spring Fever Garden Forum, Fargo, ND, March 30, 2015, [30 in person, unknown number online], (30 min.).

**Osorno**


**Peters**

January 6, 2015, A Weeds Management Strategy In Fields, Lake Region Extension Roundup, Memorial Building, Devils Lake, ND, invited

January 7, 2015, A strategy for managing weeds in fields across the crop sequence, Richland County Ag Day, Community Room, Law Enforcement Center, Wahpeton, ND, invited

January 20, 2015, Weed Control and Tillage, Soil and Soil Water workshop, FargoDome, Fargo, ND, invited.

January 30, 2015, Controlling Weeds Makes Good Cents, FSBND Ag Business Seminar, Fort Ransom, ND, invited

February 4, 2014, Mad Money – How to Manage Your (Seed) Bank Account, Soybean Best of the Best, Courtyard Hotel, Moorhead, MN, invited

February 5, 2014, Mad Money – How to Manage Your (Seed) Bank Account, Soybean Best of the Best, Alerus Center, Grand Forks, ND, invited

February, 25, 2015, Forum-Glyphosate Tolerant Weeds, American Society of Sugar Beet Technologists Meeting, Hilton Clearwater Resort, Clearwater Beach FL, invited

March 4, 2015, Mad Money – How to Manage Your (Seed) Bank Account, BASF Farmer Meeting on Weeds Management, Ramada Inn, Fargo, ND, invited

April 20, 2015Biotechnology, A Presentation to the West Fargo Rotary Club, Fargo Holiday Inn, Fargo, ND, invited

May 21, 2015, Webinar on ‘Growing Hosta in North Dakota’, Presented to the ND Master Gardeners, Loftsgard Hall, NDSU, Fargo, ND, invited

August 12, 2015, Weeds Management in Fields, Minnesota Soybean Council Meeting, Olivia, MN, invited

October 8, 2015, Controlling Weeds Makes Good Dollars and Cents, North Dakota Bankers Association Ag Credit Conference, Radisson Inn, Bismarck, ND, invited

October 13, 2015, Weed Resistance Management Working Group: A One-Year Progress Report, a breakout session at NDSU Extension Fall conference, Radisson Hotel, Bismarck, ND, invited

December 2, 2015, Rethinking Waterhemp Control, NDSU / UM Commercial Pesticide Applicator Training, FargoDome, Fargo, ND, invited
December 10, 2015, Managing Weeds in North Dakota, Bismarck Irrigation, Best Western Ram-Kota Hotel, Bismarck, ND, invited

December 15, 2015, Controlling Weeds. What are my Options? How can I make my Options Last? Wells County Winter Show, Festival Hall, Fessenden, ND, invited

January, 13, 2015, Weeds Management in the Crop Sequence Contributes to Field-based Weed Control Strategy in Sugarbeet, Sugarbeet Research Reporting Session, Fargo, Holiday, Inn, Fargo, ND

January 20, 2015, Weed Control in Sugarbeet; Cover Crops and Rotational Crops, Southern Minnesota Beet Sugar Coop Growers Meeting, Willmar Holiday Inn Conference Center Willmar, MN

February 5, 2015, Weeds Management in Sugarbeet, Grafton Growers Meeting, Grafton Parish Center, Grafton, ND

February, 10, 2015; Weeds Management in Sugarbeet, Grand Forks Growers Meeting, Alerus Center, Grand Forks, ND

February 11, 2015 Weeds Management in Sugarbeet, Fargo Growers Meeting, Fargo Holiday Inn, Fargo, ND

February, 12, 2015, Weeds Management in Sugarbeet, Minn-Dak Farmers’ Coop Growers Meeting, Wahpeton Eagles Club, Wahpeton, ND

March 17, 2015, Univ. of Minnesota, Winter Crops Day, Olivia, MN

March 18, 2015, Weeds Management in Sugarbeet, Wahpeton ND

March 19, 2015, 2015 Update on Sugarbeet Agronomy, Central Crop Consultant Meeting, Fargo Holiday Inn, Fargo, ND, [45]

Submitted oral presentations – only those not listed in 2B.

- 12 plot tours
- 9 coffee chat meetings

**Rahman**


Invited Speaker - Presented at Bangladesh Sheikh Mujibur Rahman Agricultural University, Gazipur-1706, Bangladesh, on April 07, 2015.

Invited Speaker - Presented at Bangladesh Agricultural Research Institute, Joydebpur, Bangladesh, on April 06, 2015.

**Ransom**

Made 40 presentations in 2015 at various meetings and field days. Most were invited except for the meetings that I personally organize. Total number addressed by these meetings was 2,871.

**Robinson**


Rotational crops effects on potato production in the Red River Valley. Northern Canola Growers. Fargo, ND. 19 Nov. 2015. [44]


Herbicide damage on potatoes, Dicamba and glyphosate-resistant soybean. Black Gold Agronomist training. Fargo, ND. 30 Sep. 2015. [25]

2,4-D for scab control. MN Area II Potato Field day. Becker, MN. 14 Jul. 2015. [50]


Update on phosphorous acid testing. RDO Spring meeting. Perham, MN. 31 Mar. 2015. [40]


Improving potato production through varieties and management practices. MN Area II Short Course. St. Cloud, MN. 3 Mar. 2015. [53]


Non-invited presentations

Overview of 2015 potato production. NPPGA Field Day. Larimore, ND. 20 Aug. 2015. [125]

2,4-D use for weed suppression in non-red potatoes and slow release phosphorous. Inkster, ND. 20 Aug. 2015. [200]

Red and yellow potato variety trial. NPPGA Field Day. Hoople, ND. 20 Aug. 2015. [130]


Schwarz

Understanding the Maillard Reaction. Farmer Brewer Winter Weekend, Amherst, MA Jan 17, 2015. Invited


DON-3-Glucoside in Malting and Brewing. Industry seminar on applications of barley malts. National Laboratory for Cereal Fermentation Technology, Jiangnan University, Wuxi China. May 19, 2015. Invited


Shetty

Shetty Institute of Technology, Bangalore, India February 2015 “Systems-Based Understanding of Global Food Security Challenges with Integration of Urban Living & Green Technologies”.

American Council of Medicinally Active Plants (ACMAP) 6th Annual Conference at Washington State University, Spokane, WA, USA, May 2014 “Metabolic Biology of Bioactive Medicinal Foods from American Indian Food Systems”.

Thailand Food Ingredient Conference, Bangkok, Thailand, September, 2015 “Metabolic Innovations of Phytochemicals for Health”.

Pharmaceutical Sciences, AAPS Conference, NDSU, Fargo, ND September 2015, "Metabolic Innovations for Developing Functional Foods for Countering Chronic Diseases".

Symbiosis University, Pune, India; Program in Biomedical Sciences and Nutrition, October, 2015, “Systems-Based Metabolic Innovations for Global Food Security & Public Health Challenges”.

Texas A & M University, October, 2015 “Systems-Based Metabolic Innovations for Global Food Security & Public Health Challenges”.

Sikkim University, Gangtok, India, November, 2015 International Conference on “Ethnic Fermented Foods and Beverages: Microbiology and Health Benefits” “Metabolic Basis for Fermented Foods for Health and Food Security”.

Simsek


*People’s Choice Award for Best Poster Competition*


*Second place winner of “best poster competition”*


Baasandorj, T., Simsek, S. 2015. Dark, hard and vitreous (DHV) HRS wheat kernel content effect on flour and baking quality. ASABE Intersectional Meeting. Fargo, ND.


Malalgoda, M., Ohm, J.B., Meinhardt, S., Simsek, S. 2015. Spring wheat gliadins: have they changed in 100 years? AACC International Meeting. Minneapolis, Minnesota. *First placed winner of the “AACC-I 2015 Best Student Research Paper Competition”. M. Malalgoda is MS degree student in Dr. Simsek’s program.


**Thompson**


Moderator. International Crops Expo, Grand Forks, ND, February 18, 2015. (Andy was out sick so filled in).


(Kelly Cooper gave the potato breeding report at the Oakes Field Day also held on August 20. I provided handouts, signs, prepped him, etc.)


Thompson, S. Potato improvement for the Northern Plains, NCCC215 Potato Breeding and Genetics Regional Coordinating Committee, Chicago, IL, December 8, 2015.

**West**

Invited presentation at the 2015 NDSU Horticulture Extension Spring Fever Program on woody plant diversity. This program was presented live on the NDSU Campus (Fargo, ND) and broadcast across the state to local extension offices. 454 ND residents were participating across ND. 31 March 2015


Invited keynote speaker for the 2015 ND State Horticultural Society annual meeting. Gave presentation titled: What is new with NDSU: A glimpse into the woody plant improvement program. 125 in attendance. Medora, ND. 14 August 2015

Williams
Numerous presentations are made each year at statewide, regional and national meetings involving seed and commodity producers, commodity groups, certification and seed enforcement organizations, Ag industry and university research and extension personnel.

Zhang
Zhang, Q. 2015. Genetic variations of drought tolerance in creeping bentgrass. 2015 Annual ASA, CSSA, SSSA meeting. Nov. 6-9, St. Paul, MN. (Oral)

Zollinger
In 2015, I gave 91 presentations of which 4 were invited. An itemized list by date, title, and location can be provided upon request.

Zuk
North Central Turfgrass Growers Assn. Annual Conference. Fargo, ND. Ornamental grasses: Uses and Cold Hardiness, Feb. 4

5. Books

Carena


6. Book Chapters

Hatterman-Valenti

McClean

Rahman

Robinson

7. Research Reports

Berti
Midwest Forage Association.
Midwest Cover Crops Council- ND representative
NCIS – alfalfa multi-peril insurance report

Carena


Sharma, S., N. Dong, and M.J. Carena. 2015. EEVO Genetics, Inc. NDSU Research and Technology Park. Innovation challenge proposal on marketing NDSU corn hybrids.


Carena, M.J. 2015. NDSSR (North Dakota Synthetic for Stiff Roots) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDS22 (NDSS22 for Amino Acid Quality Protein) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDS23 (NDS13HP for High Protein) Maize Release. PVP Disclosure Form and Breeding Agreement.


Carena, M.J. 2015. NDS25 (NDSS17HY for Yield and Earliness) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDS26 (NDL17HY for Yield) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDS27 (NDS15HO for Oil content) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDEarlyGEM32 (Exotic Adaptation from temperate Argentina) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDEarlyGEM33 (Exotic Elite adaptation from tropical Brazil) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDEarlyGEM34 (Exotic Elite Adaptation from tropical Caribbean) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDS57 (NDL18 for Grain Quality) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDS68 (NDSS1 for Adaptation and Female Inbred Lines) Maize Release. PVP Disclosure Form and Breeding Agreement.

Carena, M.J. 2015. NDS69 (NDSSSRS for Recurrent Selection and Female Inbred Lines) Maize Release. PVP Disclosure Form and Breeding Agreement.

**Christoffers**

Hall

Hatterman-Valenti
Hatterman-Valenti, H. and C. Auwarter. 2015. Agnition starter fertilizer trial. MN Area II Potato Research and Promotion Council and Northern Plains Potato Growers Ass. 2015 Research Reports, p. 10.

Hatterman-Valenti, H. and C. Auwarter. 2015. Effect of simulated glyphosate drift on seed pieces from four potato processing cultivars. MN Area II Potato Research and Promotion Council and Northern Plains Potato Growers Ass. 2015 Research Reports, p. 13-18.

Robinson, A., H. Hatterman-Valenti, and A. Winchester. 2015. Improving postemergence herbicides in potato production. MN Area II Potato Research and Promotion Council and Northern Plains Potato Growers Ass. 2015 Research Reports, p. 44-47.


Howatt


Kalb


Kandel


Lym


Manthey

Marais
An annual progress report was presented to the Minnesota Wheat Research & Promotion Council on March 30, 2015.

An annual progress report was presented to ND Wheat Commission on April 1, 2015.

A progress report was presented at the HWW-CP Planning Meeting that was held on April, 20th, 2015 at the University of Nebraska, Lincoln.

Peters


Robinson, A. P. Tank mixtures with Linex in Russet Burbank potato production. North Dakota Weed Control Research Reports.

Robinson, A. P. Timing of Linex + Metribuzin on Russet Burbank potato. North Dakota Weed Control Research Reports.

Robinson, A. P. Optimizing Linex Use in Irrigated Russet Burbank Potato Production. TKI NovaSource.


Schwarz

Simsek

Thompson


Zollinger
2 in Res. Prog. Rep. ND Soybean Growers Assoc.
52 in 2015 North Dakota Weed Control Research, NDSU, Fargo, ND

8. Popular Press articles

Berti
Berti, M.T., and A. Wick. 2015. How to select a cover crop or cover crop mix? NDSU Forages webpage. Available at: http://www.ag.ndsu.nodak.edu/research/plantsciences/forages


Berti, M.T. 2015. What is the best method to estimate forage yield in older alfalfa stands? Plants vs. stems. Forage Focus, March 2015. p. 21

Christoffers
AgWeek interview (2015, May 5) New definition for ‘superweeds’.

Deckard
Mick Kjar, AgWeek, What we can learn from Record Yields? April 2015.

Gramig

Hall

Howatt
Conducted six interviews for press articles with editorial remarks before printing.
Five interviews for sound-bites to be included with news report on program.

Kandel


Print Media Interviews


Rick Natynski, Sunflower survey info for Croplan publication. Interview and review article, October 28, 2015.


Radio / T.V. Interviews


-D. Thao, KVRR news. Harvest update. T.V. Interview in office. October 30, 2015

-M. Kjar, Ag News 890. 1:20-1:30 p.m. Live. Soybean maturity update and sunflower survey. September 11, 2015


-M. Kjar, Ag News 890. 1:35-1:45 p.m. Live. Soybean crop update, sunflower survey and cover crop. August 3, 2015


-Sarah Heinrich. KFGO, Fargo. Interview about Uganda. June 26, 2015. 10-10:10 a.m.

-M. Kjar, KQLX/ Ag News 890. 1:35-1:45 p.m. Live. IDC on soybean, Trip to Uganda with CRS. June 17, 2015.
- M. Kjar, Ag News 890, 1:50-2:00 p.m. Live. Soybean fertilization with N. February 6, 2015.

**Lym**

Interview with Mick Kjar concerning resistant weeds and the expected EPA plan to control them for KVLY and the Dakota Ag radio network.

**McGinnis**

The Dirt, official newsletter of the ND Master Gardener Program


**Media Outreach: Newspaper Articles**

(These articles either publicized my work or else I was interviewed as a source of information for the following articles. Links to articles included where available)


http://homes.winnipegfreepress.com/winnipeg-real-estate-articles/renovation-design/Sptted-TERROR/id-4466


Garden Project donates more than 1M pounds of produce. Farm & Ranch Guide. February 9, 2015. 

**Media Outreach: Radio**

Recorded radio interview with Mick Kjar to promote NDSU Extension’s appearance at Big Iron, September 11, 2015.


Lawn care. Tree Pruning, and Starting Garden Plants. Sound Ag Advice. April 9, 2015, 3:36 min. 
https://www.ag.ndsu.edu/soundagadvice/podcasts/04-09-15-sound-ag-advice-100.mp3/view

Media Outreach: Television Interviews (Other than North Dakota Today)

Poison Ivy Segments. WDAY First News. July 14, 2015 (four live 1-2 min. segments at 5:00 a.m., 5:30 a.m., 6:00 a.m., and 6:30 a.m.; also recorded separate segment for the evening news)


Media Outreach: KVLY North Dakota Today Gardening Segments


Lawn Tasks to Complete for Fall. September 3, 2015 (7:18) http://www.valleynewslive.com/ndtoday/home/headlines/Lawn-Tasks-to-Complete-for-Fall--324096621.html


Osorno


Television interview with M Kjar, weed control trends in 2015, January 12, 2015
Radio interview with Jay Rehder, RRVN, weeds management in fields, January 12, 2015
Radio interview with Jay Rehder, RRFN, attendance in meetings and weeds management awareness, March 18, 2015
Release article on Palmer Waterhemp with Mike Hergert from RRFN, March, 2015
Release article on ‘Back to the Future’ - Systems approach weed control in sugarbeat, Don Lilleboe, Sugarbeet Grower magazine, March, 2015, pages 14-16
Radio interview with Randy Koenen, RRFN, Early season weeds; herbicide choices, April 29, 2015
Radio interview with KFGO, discuss dry soils conditions, May 1, 2015
Radio interview with Rich Mattern, NDSU Ag Communications, for general distribution, dry spring conditions and impact on weed control, May 6, 2015
Radio interview with RRFN, discuss dry field conditions, May 7, 2015
Radio interview with KFGO, discuss field conditions, May 12, 2015
Radio interview with RRFN, discuss field conditions, May 14, 2015
Radio interview with WZFG, discuss Enlist Duo approval status, May 15, 2015
Radio interview with KFGO to discuss cold weather impacts on sugarbeet, May 19, 2015
Interview with Andrea Johnson MN Farmer Growers (Despite early planting, most sugarbeet made it through cold nights), May 21, 2015.
Radio interview, Red River Farm Network to discuss waterhemp, June 11, 2015.
Radio interview with Mike Hergert, Red River Farm Network to discuss waterhemp, June 17, 2015
Interview with Scott and Bob, The Sugarbeet Report, June 18, 2015
Interview with Mikkel Pates, AgWeek, waterhemp in sugarbeet. The interview was printed in the Fargo Forum and in the August 3, 2015 addition of AgWeek
Radio interview with Mike Hergert, RRFN, summer weed control, July 13, 2015
Radio interview with Ken Morgan, Interstate Farm Network, summer weed control, July 15, 2015
Radio interview with Jay Rehder, RRFN, waterhemp control in sugarbeet, July 21, 2015
Magazine interview, a weed control strategy, Dan Lemke, Soybean Growers Magazine, August, 2015.
Radio interview, Mikkel Pates, Agweek, Big Iron, September 1, 2105
Radio interview, Mick Kjar, Big Iron and Weeds Management, September 11, 2015
Radio interview, Ken Morgan, Interstate at Big Iron, Weeds Management, September 15, 2015
Radio interview, Mick Kjar, Big Iron and Weeds Management, September 15, 2015
Radio interview, Mark Dorenkamp, Brownfield Ag News, Weeds Management, September 15, 2015
Radio interview, Carah Hart, RRFN, Big Iron, Weeds Management, September 15, 2015
Radio interview with Cara Hart, Red River Farm Network, Weeds management, post-harvest, October 20, 2015
Radio interview with Ken Morgan, Interstate News, a strategy for waterhemp control in sugarbeet and soybean, December 3, 2015
Radio interview with Mark Dorenkamp, Brownfield Ag News, a strategy for waterhemp control in sugarbeet and soybean, December 3, 2015
Radio interview with Randy Kohen, RRFN, a strategy for waterhemp control in sugarbeet and soybean, December 22, 2015
**Rahman**

Radio broadcasted interviews

July 21, 2015: Broadcasted an interview on the NDSU canola breeding program as part of the “Canola Minute” of the Red River Farm Network, North Dakota, USA.

April 30, 2014: Broadcasted an interview on the NDSU frost-tolerant canola breeding program as part of the “Canola Minute” of the Red River Farm Network, ND, USA.

April 23, 2014: Broadcasted an interview on the NDSU heat tolerant canola breeding program as part of the “Canola Minute” of the Red River Farm Network, ND, USA.

**Ransom**

Media interviews 15 including t.v. and radio

Websites – Maintained the corn hybrid testing program webpage and the small grain page.

**Robinson**


**Media interviews:** 4 video interviews, 14 radio interviews.


**Webpage / Social media**

Potato Extension webpage had 17,905 pageviews in 2015, Of those, 86% were from the United States. The website data indicated that 66% were new visitors and 34% were returning visitors. I made 51 posts on the webpage this past year.

There were 209 posts made on social media. This includes Facebook, Twitter, Google+, and LinkedIn.

The NDSU Potato Extension Facebook page has 161 likes, 218 followers on Twitter, 15,325 views to the Google+ page, and 488 connections on LinkedIn.

The NDSU-Potato Listserv, maintained by Dr. Robinson, has 190 members.
Thompson


Zollinger

Media interviews:
- TV = 5
- Radio = 18
- Magazine articles = 26
- Crop and Pest Report articles = 16
- Telephone calls = 198 hours
- Information requests via email = 569 hours
- Office visits = 146 hours
- Diagnostic samples = 195/ 65 hours

9. Reviewed Extension Publications

Christoffers


Hatterman-Valenti


Kandel


Endres, G. H. Kandel, and J. Ransom. 2015. Replanting or Late Planting Crops. A934 revised. NDSU Extension Service. Fargo, ND.


Contributions to the North Dakota Crop and Pest Report Newsletter

Lym


Manthey

North Dakota Durum Wheat Variety Trial Results for 2015 and Selection Guide – A1067-15. 

Marais

Joel Ransom, Francois Marais, Senay Simsek, Andrew Friskop and Maricelis Acevedo (NDSU Main Station); Eric Eriksmoen (North Central Research Extension Center, Minot); John Rickertsen (Hettinger Research Extension Center); Bryan Hanson (Langdon Research Extension Center); Glenn Martin (Dickinson Research Extension Center); Mike Ostlie (Carrington Research Extension Center); and Gautam Pradhan (Williston Research Extension Center). North Dakota Hard Winter Wheat Variety Trial Results for 2015 and Selection Guide (A1196-15).

McGinnis


Osorno


Ransom

Revised five variety trial selection guides, NDSU Extension Service

Revised three non-recurring extension publications

Submitted the following articles for the Crop and Pest Report during the year:

No. 1. May 7, Checking for adequate stands of small grains.
No. 3. May 21, Frost damage in small grains and corn.
No. 4. May 28, Evaluating corn stands.
No. 5. June 4, Evaluating emergence uniformity in corn.
No. 6. June 11, Small grain and corn development: 2015 growing season.
No. 9 July 2, Preparing for planting winter wheat in land not planted this spring.
No. 13. July 30, Corn development: Late July 2015


Robinson


Simsek


Thompson


Zollinger


2015 Herbicide Compendium. NDSU Extension Circular (Revised).

2015 NDSU Adjuvant Compendium. NDSU Extension Circular (Revised).

2015 North Dakota Herbicide Mode of Action Chart (Revised)


Bringing land in CRP back into production. A-1364. NDSU Extension Circular

10. Videos

Kalb

Dakota Growing videos. Seventeen videos were published through our Dakota Garden Expo and my collaboration with Dakota Media Access:

- Growing Tomatoes in North Dakota (presented by this educator)
- Getting Started with Square-Foot Gardening (presented by this educator)
- Cool Fruits for a Cold Climate (presented by this educator)
Spring Fever Garden Forums videos. Fourteen videos were published through our Spring Fever Garden Forums and my collaboration with NDSU Ag Communications:

- Update on Japanese Beetle (presented by this educator)
- The Sweet Side of Honeyberries
- Evergreen Trees for North Dakota
- Pollinators of North Dakota
- Diagnosing Plant Problems
- Will You Dig These 2015 Flower and Garden Trends?
- How to Grow Large Onions
- Pruning Shrubs
- Update on Emerald Ash Borer
- Update on Spotted Wing Drosophila
- Edible Landscapes: Gardening Outside the Box
- Herb It Up!
- Stop Turf Problems Before They Start
- Woody Plant Diversity

These videos were posted online and viewed by over 1,100 persons during 2015.

Schwarz
Available to members of the North American Maltsters Guild http://www.craftmalting.com/video-library/
- Deoxynivalenol webinar (recorded October 2015, 1 hour:37 min)
- Malting 101 (recorded January 2015)
- Understanding the Maillard Reaction (recorded January 2015, 29 min)

11. Intellectual Property

Helms

Intellectual property PVP for ‘ND1406H’ and PVP for ‘ND Henson’ soybean varieties

Osorno

PVP # 201500067. Field bean. Talon dark red kidney bean.

PVP # 201500066. Field bean. Rosie light red kidney bean.
Thompson
PVP Certificate 201300675 issued 2015 for Dakota Russet.

West
Two Horticulture Disclosure Forms were approved for new cultivar release in 2015.
- Lavaburst™ Ohio Buckeye – Aesculus glabra ‘LavaDak’
- September Flare™ Sugar Maple – Acer saccharum ‘SeptDak’

Both trademark names are being reviewed by the US Patent and Trademark Office. Both plants have been undergoing extensive propagation trials and distribution to commercial nurseries for commercial evaluation and propagation.

III. Awards

Berti
CHS International study abroad grant. Grant to fund part of the cost of the students traveling abroad in 2015 in the course PLSC379/PLSC779. July 2015, $10,000.

Provost’s Travel Grant Award to attend the 23rd European Biomass Conference, 1-6 June 2015, Vienna, Austria. $1000

Carena
Nominated for the Dale Hogoboom and Jordan A. Engberg Presidential Professorships.

Christoffers
NDSU Academic Advising Award for 2015.

Kalb
Nominated for AGSCO Excellence in Extension Award.

Nominated for NDSU Extension Service Excellence in Extension Team Award (Spring Fever Garden Forums).

Lee
Received the Open Door Award, the NDSU Ag Week Inaugural Banquet, April 17, 2015.

Manthey

Osorno
November 4, 2015: Distinguished Achievement Award. Bean Improvement Cooperative (BIC).

Peters
Robinson
Spudman Emerging Leader Award (1st academic awarded)
2015 Extension and Education Committee Award for Newsletter, Agronomy Society of America.

Simsek
*People's Choice Award for Best Poster Competition*. Ms. Khalid is PhD student in Dr. Simsek’s program

*Second place winner of “best poster competition”. Ms. Lindgren is MS student in Dr. Simsek’s program.

Malalgoda, M., Ohm, J.B., Meinhardt, S., Simsek, S. 2015. Spring wheat gliadins: have they changed in 100 years? AACC International Meeting. Minneapolis, Minnesota. *First placed winner of the “AACC-I 2015 Best Student Research Paper Competition”. M. Malalgoda is MS degree student in Dr. Simsek’s program.

New
Nominated for the NDSU Odney Excellence in Teaching for 2014-2015. I was not chosen as the final recipient of this award for 2015.

Zollinger
<table>
<thead>
<tr>
<th>Faculty</th>
<th>Refereed Journal articles (Published or Accepted in 2015) – 115</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td>Title and Details</td>
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<tr>
<td>-----------</td>
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<tr>
<td>Creuzer, J., C.L.M. Hargiss, J.E. Norland, T. DeSutter, F.X. Casey, E.S. DeKeyser, and M. Ell.</td>
<td>(Accepted). Impact on wetlands in the Bakken region from increased road dust due to energy development. Water, Soil, and Air Pollution.</td>
</tr>
<tr>
<td>DeSutter</td>
<td>He, Y., T. DeSutter, F. Casey, D. Clay, D. Franzen, and D. Steele. 2015. Field capacity water as influenced by Na and EC: Implications for subsurface drainage. Geoderma 245-246: 83-88. (Role: research supervisor)</td>
</tr>
<tr>
<td>DeSutter</td>
<td>Shelver, W., T. DeSutter. 2015. Ractopamine soil uptake by alfalfa (Medicago sativa) and wheat (Triticum aestivum). J. Env. Sci. 34:86-92. (Role: experimentation and editor)</td>
</tr>
<tr>
<td>Hargiss</td>
<td>Accepted awaiting publication: Creuzer, J., C.L.M. Hargiss, J. Norland, T. DeSutter, E.S. DeKeyser, F.X. Casey. Impact on wetlands in the Bakken region from increased road dust due to energy development. Water, Air, and Soil Pollution. (Students major advisor, PI on proposal for funding, and assisted in manuscript preparation)</td>
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<td>Creuzer, J. C.L.M. Hargiss, J. E. Norland, T. DeSutter, F. Casey, E. DeKeyser, and M. Ellis.</td>
<td>Accepted. Does increased road dust due to energy development impact wetlands in the Bakken region? Water, Air, &amp; Soil Pollution.</td>
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<tr>
<td>Faculty</td>
<td>Abstracts – 139</td>
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</tr>
<tr>
<td>Chatterjee</td>
<td>Butcher, K., A.F. Wick, T.M. DeSutter, A. Chatterjee, J. Harmon. 2015. Effect of soil salinity on labile carbon pools in a naturally saline, sandy loam soil. ASA-CSSA-SSSA Annual Meeting, Nov. 15-18, Minneapolis, MN (poster)</td>
</tr>
<tr>
<td>Chatterjee</td>
<td>Subedi, K., A. Chatterjee, H. Mickelson. 2015. Do we need to revisit current nitrogen recommendations for the new high yielding sugarbeet varieties? ASA-CSSA-SSSA Annual Meeting, Nov. 15-18, Minneapolis, MN (poster)</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Title and Details</td>
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</tr>
<tr>
<td>Thapa, R., A. Chatterjee, J.M.F. Johnson.</td>
<td>2015. Impact of urease and nitrification inhibitors, as well as nitrogen application rate from rainfed spring wheat production system. ASA-CSSA-SSSA Annual Meeting, Nov. 15-18, Minneapolis, MN (oral)</td>
</tr>
<tr>
<td>Chatterjee, U., A. Chatterjee, H. H. Valenti.</td>
<td>2015. Potato yield response and nitrogen losses as influenced by nitrogen management and cultivar. ASA-CSSA-SSSA Annual Meeting, Nov. 15-18, Minneapolis, MN (oral)</td>
</tr>
<tr>
<td>Dong, X., P. Nyren, M.A. Liebig, A. Chatterjee, L.J. Cihacek.</td>
<td>2015. Plant vs. environmental influences on soil respiration in a mixed-grass Prairie under cattle grazing: A path Analysis. ASA-CSSA-SSSA Annual Meeting, Nov. 15-18, Minneapolis, MN (oral)</td>
</tr>
<tr>
<td>Dong, X., P. Nyren, M. A. Liebig, A. Chatterjee, and L. J Cihacek.</td>
<td>2015. Plant vs environmental influences on soil respiration in a mixed grass prairie with grazing: A path analysis. Abst. No. 300-7. ASA, CSSA, and SSSA 2015 International Annual Meetings, Nov. 15-18, 2015, Minneapolis, MN. (I provided analyses for a portion of this study)</td>
</tr>
<tr>
<td>Bhowmik, A., A. M. Fortuna, L. Cihacek, and P. Carr.</td>
<td>2015. Reactive nitrogen footprints in clean-tillage and no-tillage organic agriecosystems. ND EPSCOR, Fargo, ND. (I am major advisor to this student)</td>
</tr>
<tr>
<td>Landblom, D. S. Sentruklu, L. Cihacek, L. Pfenning, and E. Brevik.</td>
<td>2015. Seasonal soil nitrogen mineralization within an integrated crop and livestock system in western North Dakota, USA.</td>
</tr>
</tbody>
</table>
Abst. EGU2015-7766. Abst. of the European Geosciences Union (EGU) Meetings, April 12-17, 2015, Vienna, Austria. (I am a collaborator on the soils portion of this project)


<p>| DeSutter | Breker, M., T.M. DeSutter, A. Chatterjee, and A.F. Wick. Microbial response to sodic soils amended with flue-gas desulfurization gypsum, sugar beet processing byproduct lime, and langbeinite. Presented at the International Meetings of the ASA-CSSA-SSSA. Minneapolis, MN. November 15-18 (Role: advisor) |
| DeSutter | Derby, N.E., F.X.M. Casey, and T. DeSutter. 2015. Effects of oil field brine wastewater spills on soil hydraulic conductivity. Presented at the International Meetings of the ASA-CSSA-SSSA. Minneapolis, MN. November 15-18 (Role: scientific advisor) |
| DeSutter | Knudson, M., A.F. Wick, T.M. DeSutter, and C. Heglund. 2015. Salinity management, cover crops and tile drainage: Research and demonstration site in Grand Forks County, North Dakota. Presented at the International Meetings of the ASA-CSSA-SSSA. Minneapolis, MN. November 15-18 (Role: project PI) |
| DeSutter | O’Brien, P., T.M. DeSutter, N.E. Derby, F.X.M. Casey, and A. Wick. 2015. Effect of thermal desorption on soil physical and hydraulic properties. Presented at the International Meetings of the ASA-CSSA-SSSA. Minneapolis, MN. November 15-18 (Role: advisor) |</p>
<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>DeSutter, E.C., A. Chatterjee, T. DeSutter, and D. Franzen.</td>
<td>2015. Sodic soil reclamation potential of gypsum and biochar additions: Influence on chemical, physical, and biological parameters. Presented at the International Meetings of the ASA-CSSA-SSSA. Minneapolis, MN. November 15-18 (Role: co-advisor)</td>
</tr>
<tr>
<td>Wamono A.W., D.D. Steele, Z. Lin, T. DeSutter, and X. Jia.</td>
<td>2015. Effects of calcium amendments on infiltration rates of subsurface drained sodic soils. Written for presentation at the North Central American Society of Agricultural and Biological Engineers Conference, 10-11 April 2015, Fargo, North Dakota. Presentation No. RRV15-031 (Role: project PI, research committee member, scientific advisor)</td>
</tr>
<tr>
<td>Eric C. Schultz, A. Chatterjee, T. DeSutter, and D. Franzen.</td>
<td>2015. Sodic soil reclamation potential of gypsum and biochar additions and influence on chemical, physical, and biological properties. ASA meetings, Minneapolis, MN.</td>
</tr>
<tr>
<td>Schultz, Eric C. and D. Franzen.</td>
<td>2015. Nitrogen and phosphorus recalibration for modern varieties of sunflower for the Northern Great Plains. ASA meetings, Minneapolis, MN.</td>
</tr>
<tr>
<td>Franzen, D.W.</td>
<td>2015. Soil mineralogy and possible influence on potassium fertilizer response in North Dakota. ASA meetings, Minneapolis, MN.</td>
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<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Conference/Meeting</th>
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<tr>
<td>Author(s)</td>
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### Proceedings papers (4)

<table>
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<tr>
<th>Faculty</th>
<th>Proceedings Papers – 4</th>
</tr>
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</table>

### National or International Invited Presentations (34)

<table>
<thead>
<tr>
<th>Faculty</th>
<th>National or International Presentations – 34</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeSutter</td>
<td>DeSutter, T. 2015. Opportunities and challenges for the reclamation of soil in North Dakota's oil-patch region. Presented to faculty, staff, and students at the Department of Plant Sciences at South Dakota State University, Brookings, SD. September 14.</td>
</tr>
<tr>
<td>DeSutter</td>
<td>DeSutter, T. 2015. Opportunities and challenges for the reclamation of soil in North Dakota's oil-patch region. Presented to faculty, staff, and students at the Department of Soil Science at North Carolina State University, Raleigh, NC. March 19.</td>
</tr>
</tbody>
</table>

Foster, S.P. Chemical communication and insects. Le Studium Lecture Series, Tours, France, 3 December 2015.


Harris, M.O. Dissecting and Deploying Resistance to Biotic Stress in Wheat. International Center for Agricultural Research in the Dry Areas (ICARDA), Rabat, Morocco, 4 June 2016.

Harris, M.O. From Behavior to Agriculture. Institute for Research on the Biology of Insects (Institut de Recherche sur la Biologie de l’Insecte- IRBI), Tours, France, 25 June 2016.

Harris, M.O. Feeding the World – the New Imperative for Interdisciplinary Systems Science. Le Studium Lecture Series, Tours, France, 3 September 2015.

Harris, M.O. Grasses and Gall Midge- What We Hope to Know Some Day. Le Studium Conference on Insects, Pathogens, and Plant Reprogramming: from Molecules to Ecology, Tours, France, 5-7 October 2015.


<table>
<thead>
<tr>
<th>Faculty</th>
<th>Book Chapters – 5</th>
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</table>
Research Reports (50)

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Research Reports - 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casey</td>
<td>Wick, A.F., F. Casey; D. Ripplinger (compiled by R. Schewe). 2015. Research and Extension Activities at the Soil Health and Agriculture Research Extension (SHARE) Farm: Tile Drainage in...</td>
</tr>
<tr>
<td>Author</td>
<td>Title</td>
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<tr>
<td>DeSutter, T., A. Chatterjee, A. Wick, M, Breker.</td>
<td>Improving Soil Health and Productivity of Sodic Soils. 2016 mid-year report</td>
</tr>
<tr>
<td>Franzen, D.W.</td>
<td>Report to North Dakota corn council in potassium study progress</td>
</tr>
<tr>
<td>Franzen, D.W.</td>
<td>Report to National Sunflower Association in N and P recalibration study progress</td>
</tr>
<tr>
<td>Franzen, D.W.</td>
<td>Report to IPNI for general soil fertility research progress</td>
</tr>
<tr>
<td>Hargiss, C.L.</td>
<td>Progress Report: Road Dusts: Their Abatement and Impacts on Human Health. 2015. North Dakota State University</td>
</tr>
<tr>
<td>Author</td>
<td>Title</td>
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<tr>
<td>Faculty</td>
<td>Popular Press articles - 25</td>
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<tr>
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</tr>
<tr>
<td>Franzen</td>
<td>Franzen, D.W. Provided 12 entries into the NDSU Crop and Pest Reports, 2015. These covered a range of topics from soil erosion to sulfur nutrition, soil testing and in-season nitrogen application for wheat protein enhancement and early season N-loss to corn. The entries were picked up and run by numerous newspapers and magazines inside and outside our region. Currently, the North Dakota Corn Council has one report on soil erosion on its website.</td>
</tr>
<tr>
<td>Wick</td>
<td>Wick, A.F. Giving Thanks for our Soil Health Farmers. 2015. ETS/Soil Warrior Blog.</td>
</tr>
</tbody>
</table>

**Reviewed Extension publications (10)**

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Reviewed Extension Publications - 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hovick</td>
<td>Hovick, T.J. Effects of Fire and Grazing on Greater Prairie-Chickens, Oklahoma State University Fall Newsletter</td>
</tr>
<tr>
<td>Faculty</td>
<td>Videos Created – 18</td>
</tr>
<tr>
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</tr>
<tr>
<td>Wick</td>
<td>Wick, A.F. and A. Daigh. 2015. ND Soil Health Tillage Study Update, Extension Education Video, InHouse Productions, <a href="https://m.youtube.com/watch?v=FwLqO7Wsf2g">https://m.youtube.com/watch?v=FwLqO7Wsf2g</a></td>
</tr>
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Webinars (1)

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Webinars Created</th>
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Software

Apps

Awards (State, Regional, National, International)

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Teaching Awards</th>
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<tbody>
<tr>
<td>DeSutter</td>
<td>Teaching Award of Merit, North American Colleges and Teachers of Agriculture</td>
</tr>
<tr>
<td>Hargiss</td>
<td>Nominated for William J. and Angelyn A. Austin Excellence in Advising Award, NDSU College of Agriculture, December 10, 2015 (University).</td>
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<table>
<thead>
<tr>
<th>Faculty</th>
<th>Research Awards</th>
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<tbody>
<tr>
<td>Chatterjee</td>
<td>My MS graduate student, Resham Thapa received IPNI Scholar Award and outstanding graduate student award from Soil Environmental Quality section of Soil Science Society of America</td>
</tr>
<tr>
<td>Harmon</td>
<td>Larson/Yaggie Excellence in Research Award, NDSU College of Agriculture, December 10, 2015 (University).</td>
</tr>
<tr>
<td>Limb</td>
<td>Society for Range Management Outstanding Young Professional (National)</td>
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<table>
<thead>
<tr>
<th>Faculty</th>
<th>Extension Awards</th>
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</thead>
<tbody>
<tr>
<td>Franzen</td>
<td>Received an award from the American Society of Agronomy for contributions to the NDSU Crop and Pest Reports. This award was also received by all the other contributors to the Report, with the nomination packet submitted by Dr. Mohamed Khan, Plant Pathology.</td>
</tr>
<tr>
<td>Wick</td>
<td>Myron and Muriel Johnsrud Excellence in Extension/Outreach (Early Career) Award, NDSU College of Agriculture, December 10, 2015 (University).</td>
</tr>
<tr>
<td>Wick</td>
<td>Merit Award for the NDSU Soil Health Team through the Soil and Water Conservation Society, received in Greensboro, NC in July 2015 (National).</td>
</tr>
<tr>
<td>Wick</td>
<td>ASA Educational Materials Awards Program for NDSU Soil Health and Land Management Video Library through the American Society of Agronomy, received in Minneapolis, MN, November 2015 (National).</td>
</tr>
</tbody>
</table>
Sheela Ramamoorthy


John McEvoy


Birgit Prüß

Chaithawiwat, K., A. Vangnai, J. McEvoy, B.M. Prüß, S. Krajangpan, and E. Khan. 2016. Impact of nanoscale zero valent iron on bacteria is growth phase dependent. Chemosphere. 144:352-359. (the epub was out in 2015, the final article in the first days of 2016)


Teresa Bergholz


1. Abstracts
2. Proceedings papers
3. National or International Invited Presentations


Invited Presentation:

III. Awards (State, Regional, National, International)

P. Bergholz awarded a CAREER (Early Career Faculty Development) grant from the National Science Foundation. The award started on 1 May, 2015. Awarded a bioinformatics seed proposal through NDSU and UND to collect initial data on microbial diversity in Prairie Pothole Wetlands, a key natural resource in North Dakota and the breeding or migratory grounds for > 80% of all North American waterfowl.

Abby Steckler awarded ASM Fellowship

Three Micro students named as CAFSNR Top 10 Seniors: Heidi Arzt, Jordan Brummond and Bridget Eklund

VMS GSA participated in 2nd annual Avenues of Scientific Discovery 2016

Meredith Schroder awarded 3rd place in NDSU Innovation Challenge 2016 (doctoral student in Molecular Pathogenesis, PhD)

Manpreet Bains won the 2016 NDSU 3-minute competition

Teresa Bergholz awarded 2015 Earl and Dorothy Foster Excellence in Teaching Award


Dyer - 03/13/15 – 03/22/15 – Invited speaker for first week long seminar (swine diseases, dermatopathology, immunohistochemistry, gross pathology, selected case studies), Facultad Ciencias Veterinarias, Universidad Autonoma Gabriel Rene Moreno, Santa Cruz, Bolivia

Dyer - 10/22/15 – 10/31/15 - Invited speaker for second week long seminar (poultry diseases, pathology of the respiratory tract, diagnostic cytology, tumor diagnosis, selected case studies), Facultad Ciencias Veterinarias, Universidad Autonoma Gabriel Rene Moreno, Santa Cruz, Bolivia

Michelle Mostrom, Chapter 000478 Mycotoxins: Classification; Chapter Mycotoxins: Toxicology in Encyclopedia of Food and Health, edited by Caballero, Finglas and Tolder, Elsevier

III. Awards (State, Regional, National, International)