Agricultural Research Stations

Annual Report

For Calendar Year 2014

March 2, 2015

Arlington ARS Annual Report
Calendar Year 2014
March 2, 2015

1. **Notable station achievements:** Highlight noteworthy activities as they relate to the station mission/purpose

   We faced a tough spring with cool wet conditions. This delayed much of the field work and packed it into narrow "windows". With a dedicated crew we were able to work through this and still provide a high level of support to researchers and attain respectable crop yields.

   We were able to continue to improve facilities and equipment. Asbestos removal and new flooring at Agronomy has created a safer, more pleasant office. Several old buildings that were in disrepair were removed. The Big Red Case and Mid-State John Deere equipment deals continue to benefit the station and researchers with brand new equipment to carry out operations.

   The feed mill made many improvements including: starting in- house tracer testing to monitor mixing uniformity; savings and new income generation of $6500/year; purchasing a weigh buggy to decrease prep time and bag lifting, installing an in-line feed sampler to supply consistent, representative samples for research and quality control needs; and adding pallet racks which increased storage capacity by over 200% in the warehouse.

   We had five longtime employees leave, most to retirement. They represented 135 years of combined experience. We were able to hire great individuals to fill these positions and the rest of the crew stepped up to maintain a high level of service to the researchers.

2. **Number of research projects:** Estimate as best you can the number of crop and animal projects on your station

   329 Crop-related research projects and 18 animal projects.
   The feed mill also provides feed for trials on campus and Vet Medicine.

3. **Change**: Highlight significant trends or changes from previous years that are creating opportunities or challenges

   Several key research technicians and professors have left or retired in the past one to two years. Most of these positions have not been refilled. This is starting to lead to increased assistance needed from the Headquarters crew. Assistance needed at the animal units has also dramatically increased.

   FDA's Food Safety Modernization Act will perhaps impose many new regulations for feed mills later in 2015 and early 2016.

   The station does not have a large enough land base to support the research projects, raise crops for feed, and apply animal manure. We have manure application agreements with several neighboring farmers. We also cash rent or have crop purchase agreements on approximately 400 acres. This is now costing over $150,000 per year. Competition for land is intense because of several large dairy and grain operations in the immediate area.

4. **Goals for the coming year:** Fill the current open positions and several anticipated retirements so we can meet research requests and provide a high level of timely service to researchers.

   Complete the Blaine Dairy manure upgrade project so the DNR can issue a new WPDES permit. Blaine has been operating under the expired permit since July 1, 2013.

   Complete several large-scale maintenance items which include cleaning silt from a major waterway by soils and removing many of the completed forestry studies to reclaim cropland.

   Improve feed quality control and feed mill efficiency. Maintain a level of quality which would pass a State Inspection.

5. **Areas of concern and challenges:** The quantity of animal manure produced exceeds the current land capacity for sustainable application while supporting research. Soil test phosphorus levels on several fields are increasing into a range where applications will be limited.

   New state laws for heavy equipment use on roads give protections for many of our uses, but will obsolete some of our current equipment/practices. Different methods/equipment will have to be used to apply manure. In the past, most manure was spread using tankers.

   It is a challenge to keep safety programs and training up to date, especially with personnel from academic departments. Safety is not a top priority for the departments and often falls back onto ARS for compliance.

   The feed mill was built in the late 1960s. While still functioning, it is showing its age. The pneumatic feed transfer system has caused two customers to purchase commercial feed due to excess fines in the diet. A solution will have to be found about how feasible it will be to replace the current structure.

CALS Greenhouses ARS Annual Report
Calandar Year 2014
March 2, 2015

Encompasses:

- Walnut Street Greenhouse
- King Hall (Soil Science) greenhouse
- 2 greenhouses at West Madison station
- Eagle Heights research field

Staffed by:

- 2 full-time managers
- 1 part-time horticultural technician
- 1-2 LTE's
- 0-2 students

Serves:

- **Campus-wide facility**
- **~80 UW faculty, ~50 active at a given time**
- **~230 users and ~150 projects at any given time**
  (Federal and campus researchers, emeritus faculty, visiting scientists, technicians, post docs, graduate and undergraduate students.)
- ≥ 12 departments
- ≥ 5 additional organizations/groups
  (Lakeshore nature preserve, GLBRC, WI Energy Institute, etc.)

1. Notable Station Achievements:

The Walnut Street Greenhouses have relentlessly improved the facilities in both large and small ways.

Major Improvements:

- Upgrade of old section electrical – 300K
- Upgrade old section steam heat – 300K
- Installation of liquid fertilizer system in all 72 houses – 200K
- Added 3 new air conditioning units – 20K
- Bringing 3 growth chambers online (chambers were gifts) – 80K
- Seal and repair King Hall floors – 20K
- Upgrade of 112 fan coil units for easier maintenance and longer motor life – 24K
- Installation of emergency generator at West Madison – 25K
- Ridge vent improvements at King Hall and Walnut Street – 46K

Smaller Projects:

- Removing all asbestos in older section
- Water line replacement at King Hall – 1.5K
- Overload protector installation on all ACs in old section – 5K
- New lighting in old section – 6K
- Lighting installation in cold room -5K
- New light hangers in King Hall – 2K
- Acquisition of a heavy-duty tiller and mulch layer for EH garden – 6.5K
- Bench renovation at King Hall to enhance drainage and prevent leaks – 2K
- Enhanced security (theft prevention) at King Hall – 1.5K
- Retrofit of growth chambers to replace outdated fluorescent lighting with Metal Halide – 7K
- Gift of HID lighting at West Madison – 6K

Number of Research Projects:

Currently, there are over 125 projects at Walnut Street, with another 19 at the West Madison greenhouses, and 6 at King Hall. In the spring, we anticipate at least another 10 projects at the Eagle Heights research field. However, it must be noted that while we have as many as 150 projects utilizing our space at one time, projects may last a matter of a few weeks, months, or years. We estimate that somewhere between 250 and 450 projects utilize space at our station each year.

See the attached excel grid for more information on the depth, breadth and impact of these research projects.

Change Over Time:

The research greenhouses no longer have the capacity to satisfy the demands of the users. Often, researchers have to wait to be able to obtain greenhouse space and sometimes the quality of space is not the quality that researchers desire.

Goals for Coming Year:

Work with the greenhouse renovation committee to produce a design for a greenhouse that will meet the needs of plant researchers for the next 50 years. Other lesser goals include conducting extensive media trials to see if we can improve our basic growing media, and explore ideas and options for enhanced CO_2 enrichment in the research greenhouses.

Areas of Concern and Challenges:

As mentioned above in the change section, we struggle to provide enough space and the quality of space that researchers need. We are also challenged by having to maintain a large number of air-conditioners, fans, motors, maintenance machines and vehicles with a very small budget. It would be ideal to be able to hire a trained electrician/mechanic to handle electrical and mechanical repairs in-house. Our current staff maintains and repairs what they are able to, but some items need more technical expertise, and Physical Plant tradesmen are often very expensive when called. This position would not need to be a full-time position.

Dairy Forage ARS Annual Report
Calendar Year 2014
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1. **Notable Station Achievements:**

   In the past year U.S. Dairy Forage Research Center (DFRC) has welcomed a new center director. Dr. Mark Boggess has worked on developing a new mission and vision statement which will align with USDA-ARS but be specific to our research. DFRC's new mission statement is:

   Providing dairy industry solutions for food security, environmental sustainability and economic viability. We build uniquely valuable, science based research initiatives focused on dairy production systems; soil ecology; forage production; forage quality; nutrient management and ecosystem services.

   US DFRC's Vision Statement is:

   Leading the world in integrated dairy forage systems research.

   The Gas Emission chambers at the DFRC farm have undergone major renovation to help provide better data. Feeding trials utilize the emission chambers to compare different rations and specifically the difference in gas emissions.

   Researchers are looking at ways to improve the efficiency of protein in alfalfa which would reduce supplemental protein. One means of doing this is using tannins. Tannins bind with protein and allow digestion further through the gut. Plant breeders are looking at modifying alfalfa to include the traits of tannin in alfalfa.

   A fall oat trial took place in the fall of 2014 with a feeding trial to follow. Seeding oats in the early August allows farmers to utilize double cropping. In our situation we killed a field of alfalfa after third crop and seeded oats. The oats grown in fall store sugars differently and can be fed in place of corn silage.

2. **Number of Research Projects:**

   In the past year we supported seven researchers in 11 protocols in which 250 animals were utilized. In addition we assist plant breeders and physiologists in some of the larger scale harvests that require larger equipment.

   One of these studies was a leaf stripping trial in which the leaves are stripped off of the alfalfa plant on the first pass, while the second pass harvests the stem. The objective of this trial is to look at the feasibility of harvesting and feeding the higher quality leaves to the dairy herd while the stems could go to young stock feed or for cellulosic ethanol production.

3. **Change:**

Financially, milk prices have continued to offer DFRC a unique opportunity to improve the animal facilities. While the prices have weakened the production level has continued to provide sustainable revenues.

Genomics is becoming a more widely used technology in dairy. At DFRC much of the work is related to tracking feed efficiency traits in cattle. U.S. DFRC has budgeted to include an animal geneticist at DFRC to study genomic traits and feed efficiency.

4. **Goals for the Coming Year:**

Goals for the coming year include completing some important heat abatement projects for the dairy facility as well as improving transition animal housing.

New dairy scientists will be starting trials at the farm in the coming months and this will require all involved to get acclimated to new expectations.

5. **Areas of Concerns and Challenges:**

A primary concern here at DFRC is recruiting and retaining good employees. As the local economy improves many of the industries hiring are able to pay better wages than the UW system offers.

Hancock ARS Annual Report
Calendar Year 2014
March 2, 2015

Notable Achievements:
The Hancock Station was home to approximately 75% of the potato field research done in Wisconsin in 2014. Critical research is also done in snap beans, sweet corn, carrots and other vegetable crops.

Troy Fishler was hired as the new Storage Research Facility Manager and three Project positions were filled as permanent classified positions.

The new AgRay potato grader/sorter was optimized to improve reliability of data on weight and external and internal defects of potatoes and potentially other vegetables

The new potato bin piler was put into full service in the Storage Research Facility, decreasing the potato bruise potential when potatoes are stored

The Station installed a new linear irrigation to enhance 25 acres for research and provide additional segregation of research projects that need to be isolated

The station hosted 6 formal field days and conducted numerous industry meetings and public tours.

The Hancock Station received the Wisconsin Potato and Vegetable Growers Association Industry Appreciation Award.

Number of Research Projects:
Hancock supported 79 field and storage crop projects for 21 CALS/USDA research groups. These included projects for 19 graduate students.

9 private potato and vegetable companies established 14 research and demonstration trials at the station.

Change:

With the concerns over water use in the central sands and its impacts on groundwater, streams lakes and neighboring wells, there is a strong interest in additional research on water use efficiency.

With the advent of drones and its use with remote sensing, there is a strong interest with researchers to conduct studies on its use in crop scouting and in the evaluation of agricultural traists.

Goals for the Upcoming Year:
Sustain and increase the quality of the research and outreach functions of the station

Reactivate the Potato and Vegetable Storage Research Facility Advisory Committee and jointly plan the best possible research and outreach programs with CALS faculty and staff

Host the Hancock Agricultural Research Station Centennial Celebration

Make improvements to the station's aging infrastructure, including insulating the Potato Grading Shed to protect the new AgRay potato sorter, expand the grading time, improve potato storage and allow the release of two bulk bins for additional research projects in the Storage Research Facility. We would also like to build a structure to protect the potato bin piler.

Make improvements in the Storage Research Facility to include replacing corroded walls in the bulk bins and locker refrigeration units and installing additional CO2 sensors in the lockers

Increase irrigation efficiency and install new wireless moisture sensors that can provide more data to researchers on a more timely basis than our current manual moisture sensors

Areas of Concern and Challenges:
Impact of budget reductions on the station

Aging infra-structure and aging equipment

Sustaining the necessary growth to continue to fulfill the missions of research and outreach of WU-Madison, CALS and the Station

Kemp Natural Research Station Annual Report
Calendar Year 2014
March 2, 2015

1. **Notable Station Achievements**
   - Supported 6,500 user-days of diverse station activity and provided 3,500 person-nights of lodging, *a 10% increase over 2013 usage levels*
   - Generated over $110 thousand in donations, including:
     - a $50k donation from the Brittingham Fund to support construction of the new Education & Outreach Center;
     - a $35k initial donation plus an additional $50k pledge to create the Andrew & Barbara McEachron Forest Stewardship Fund at Kemp Station to support research, instruction and outreach;
     - a $10k donation to implement the Hamilton Roddis Memorial Lecture Series; and
     - an additional $20 thousand in undesignated donations to support station infrastructure improvements and programming
   - Purchased 10 new computers, software and GPS equipment via a $14k Instructional Laboratory Modernization Grant
   - Completed several facility improvement projects, including:
     - Replaced the 20-year-old tile floor in the Laboratory Building;
     - Raised the WiMAX tower from 60 to 100 feet to improve wireless Internet range;
     - Restored 4 stone chimneys on the Lodge and Office/Laboratory buildings via DOA/DFD building maintenance funds;
     - Completed the Pavilion renovation project, including installation of a historical display;
     - Repaired damaged flooring, walls and fire sprinklers in the Mead Residence Hall following a fire sprinkler freeze and rupture (paid for by UW Risk Management); and
     - Installed a shoreline protection demonstration project, paid for by landscape industry partners
   - Met with Senator Tom Tiffany and Representative Rob Swearingen to increase their awareness about the mission, activities and contributions of Kemp Station

2. **Number of Research Projects, Instructional Activities, Outreach Events & Conferences/Workshops**
   - ***Research***
     - Supported 50 different research projects (up 14% over 2013 levels) involving 44 principal investigators from 6 UW-Madison academic departments and 13 extramural universities/agencies;
     - Provided 1,612 person-nights of research lodging;
     - Attracted 11 new researchers to the station;
     - Remotely demonstrated the Kemp WiMAX wireless Internet testbed at the *Global Environment for Network Innovations Conference*, UC-Davis (http://www.geni.net); and

- Co-organized and implemented the *3rd Science in the Northwoods Conference*, attracting 135 participants who gave 94 separate presentations (both new records)

- ***Instruction***
  - Supported 10 field classes involving 4 UW-Madison academic departments and 4 extramural universities;
  - Provided 1,308 person-nights of instructional lodging

- ***Outreach***
  - Conducted 10 outreach events as part of the *Kemp Summer Outreach Series*, attracting 231 participants;
  - Prepared 2 issues of *Kemp's Point*, the semi-annual station newsletter that is distributed to 820 households;
  - Co-organized and implemented the second year of the *Science on Tap* outreach series (10 events), attracting more than 1,400 people;
  - Co-organized and implemented a very successful *Mining Forum & Field Tour*, attracting 435 people;
  - Hosted 2 separate environmental field days for 110 local middle school children;
  - Organized a presentation by Dean VandenBosch to 60 college-bound juniors and seniors at the Lakeland Union High School;
  - Organized the 2014 Hamilton Roddis Memorial Lecture, attracting 640 people (a new record);
  - Hosted 8 external outreach programs organized and conducted by 8 different agencies/groups, providing 478 person-nights of outreach lodging; and
  - Gave 5 different outreach presentations to a total of 145 people from various organizations and civic groups

- ***Conferences/Workshops***
  - Hosted 15 conferences and workshops put on by a variety groups, including UW-Madison academic departments, UW Extension, Wisconsin Department of Natural Resources, Great Lakes Inter-Tribal Council, among others;
  - Provided 392 person-nights of conference/workshop lodging

3. Change

2014 was a banner year for Kemp Station. The station accomplished several facilities improvement projects; attracted two new donors and generated over $120 thousand in gifts and grants; and maintained record-high levels of research, instruction, outreach and conference activity. Much of this success can be traced to a single station attribute: diversity. The station supports many different users from a variety of affiliations, both intramural and extramural, conducting a wide array of activities. It is this diversity that underlies the vitality of Kemp and provides the foundation for a bright future.

4. Goals for the Coming Year

- Maintain historically high levels of research, instruction, outreach and conference/workshop activity
- Continue to raise funds for the station's new Education & Outreach Center
- Increase the station's Internet bandwidth to 50Mb/sec (currently at 1.5Mb/sec) with the additional cost paid for by an increase in lodging fees
- Hire a talented and hardworking 100% FTE Facilities Maintenance Specialist-Advanced to replace Gary Kellner
- Implement the station's succession plan given the pending retirement of the station superintendent

5. Areas of Concern & Challenges

Kemp Station faces two areas of concern: The first is maintaining high levels of research, instruction, outreach and conference activity in light of proposed budget cuts, both to UW System institutions and to WDNR Science Services. I am confident Kemp will rise to meet these challenges by: i) expanding and building upon its diverse user base; ii) actively pursuing new opportunities and forging productive new partnerships; and iii), being both flexible and creative when addressing budgetary and other emerging challenges.

The second area of concern is the recent retirement of the station's longtime carpenter/facilities maintenance specialist-advanced and the pending retirement of the station superintendent. Kemp is a small station with a small staff; it is also a thriving, highly productive and intensively used station. Together, these two retirements represent 50% of the station's 4 positions and 62% of the station's 2.83 FTEs. It is essential the station implement a timely succession plan to ensure a smooth transition in leadership without a loss in productivity or momentum. This is particularly important given the new and challenging fiscal environment facing the university.

UW Lancaster ARS Annual Report
Calendar Year 2014
March 2, 2015

1. **Notable Station Achievements:**
    a. Providing unbiased research and results in an University setting for producers of the Driftless Region along the Mississippi River including Wisconsin, Illinois, Iowa, and Minnesota.
    b. Management of the Long Term Crop Rotation Study area on station for almost 50 years. This is the 2nd oldest crop rotation study in the US. It has included many different research projects and has provided a resource to crop researchers to perform a variety of projects and collaborations within and outside of the UW. Additionally, the crop rotation study is now part of a "Cropping Systems Coordinated Agricultural Project Field Research Network." There are 10 universities and 2 Federal Government agencies involved in this project. According to the website, this USDA funded project gathers data from 35 field sites and thousands of farmers in 9 Midwestern states, with the goal of creating a suite of practices for corn-based systems that:

        - retain and enhance soil organic matter and nutrient and carbon stocks
        - reduce off-field nitrogen losses that contribute to greenhouse gas emissions and water pollution
        - better withstand droughts and floods
        - ensure productivity under different climatic conditions

        The website for the project is www.sustainablecorn.org
    c. Providing continued grazing and commercial beef cow/calf research for the Wisconsin Beef Industry that is the state's second largest livestock industry and ranks in the top three industries overall in Wisconsin agriculture. The commercial beef herd and management intensive grazing activities allows researchers and extension staff to utilize the resources of the station for research and outreach functions.
2. **Number of Research Projects –**
    a. Agronomic Crop Projects - 27 total projects including areas of corn, soybeans, forages, (including alfalfa, grasses, and other forages), small grains, cover crops, soil conservation, and fertility.
    b. Beef Cattle and Grazing Projects – 8 total projects including cow/calf genetics, cow/calf reproduction, feedlot animal performance including beef and dairy breeds, grazing animal performance, grazing plant species performance, and weed management in pastures.
3. **Changes:**
    a. Interest in larger agronomic plot areas has created the challenge of finding enough uniform land to accommodate the size and scale of these projects.

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b. Interest in cover crop research for their role in soil conservation, nutrient and sequestration, increasing organic matter and reducing the amount of nitrogen that enters the surface and groundwater.
c. Research with twinning in the beef herd.
    i. Opportunities to help explore a novel type of gene in beef cattle genetics in relatively unstudied area in beef production.
    ii. Challenges exist in dealing with a subject area that is not well received by producers in the beef industry in the state and nationally. Also twinning research at the USDA ARS facility in Nebraska has received scrutiny by popular press on a national scale. Another challenge specifically with the genetics of these cattle in this project is dealing with the unpredictable and sometimes dangerously bad disposition. Efforts are being taken to improve the disposition and facilities, but still the risk for animal care staff and researchers are increased in dealing with these cattle as compared to traditional cattle genetics.
    iii. Grazing Research in wooded areas –Opportunities to help explore an unstudied, but useful area that could benefit livestock and forestry areas. An opportunity to create a new network and cooperation between faculty of different departments while engaging some different faculty (from Forestry) in work at Lancaster and potentially all of ARS.

4. Goals for the coming year –

a. Support existing research projects and encourage new research projects for the future. Facilitate needs of existing and new faculty as they bring ideas for new research projects to Lancaster ARS.
b. Continue to act as liaisons with the local agriculture industries to share what their needs are with researchers and UW staff to find out what opportunities we can help provide support with research and outreach activities.
c. Re-establish one to two public field days to share the information of researchers and research work done at Lancaster and across the UW-Madison system.
d. Continue to develop the Lancaster ARS website and Facebook page to disseminate information and provide exposure for Lancaster ARS.

5. Areas of concern and challenges –

a. Budget cuts – As with everyone in the UW System we are most concerned with how big the budget cuts will be and how we will be able to handle those cuts once they are determined
b. Replacement of a permanent Animal Research Technician position to fulfill the needs of the beef research at Lancaster ARS. Due to a recent retirement, we have an open position that we are unable to fill because of the hiring freeze.
c. Filling the open livestock extension specialist positions. We have worked closely throughout the years with the former Beef Extension Specialists in research and outreach areas. Without that type of position on staff and their expertise, we are missing the interest and opportunities to carry out different aspects of our mission that have made us valued by our stakeholders interested in our beef activities.

Marshfield ARS Annual Report
Calendar year 2014
March 2, 201

Notable station achievements

- Meetings held in Russell J. Johannes auditorium: 150 events, over 4,000 attendees; 99% of activities were UW/UWEX-associated
- North farm tours, classes, and meetings: 33 events, over 700 attendees
- Student employees/interns: 5 students in 2014; 5 planned for 2015
- Dairy operation: 125 lactating cows, 530 replacement dairy heifers; part of integrated dairy research facility with the UW Department of Dairy Science
- Crop operation: 1400 acres of crop production and research; collaborating with CALS Departments of Agronomy, Soil Science, Biological Systems Engineering, Horticulture, and Entomology
- Partnership with eight USDA-ARS scientists based out of Madison and Marshfield facilities
- Resource for farmers and industry in proven and widely adopted practices i.e., limit feeding dairy cattle, no-till planting
- Working relationships: Marathon County & NRCS drainage project, Central Wisconsin no-till farmers group, Marshfield Area Chamber of Commerce & Industry, National Farm Medicine Center

Number of research projects

- 58 field/agronomic research trials in 2014; 81 acres and 17 researchers; 3 private companies
- 7 animal/livestock research trials in 2014; 536 animals and 7 researchers

Changes creating opportunities or challenges

- Challenging weather conditions (sub-norm) resulting in delayed planting, loss of trials, poor crop production
- Animal facility deficiencies – over time, buildings are no longer in line with current UW research-driven recommendations
- Transition of south MARS main office building to Soils Department
- Loss of buildings and building space –catastrophic building losses of 2014 have left MARS with fewer options for storing machinery and commodities.
- Declining commodity markets have caused farmers to consider adopting alternative practices, e.g., no-till planting, and UW recommendations
- New hires to fill positions vacant due to retirements in CALS depts. located at MARS including director of the UW Soils and Forage Analysis Lab and dairy scientist

Goals for the coming year

- Collaborate with the City of Marshfield to strategically swap land at MARS south for land closer to the North farm campus in Marathon County

- Work with Soil Science Department to transfer south campus building/office space; determine MARS inputs necessary at the south campus
- Strategize a plan for the acquisition and development of a north farm administrative building (to include a large meeting room)

Areas of concern and challenges

- Need an administrative building at north farm including office spaces and a large meeting room to facilitate daily operations such as providing adequate office space for station administration, internal station meetings and to serve outreach needs of the University, industry, and the community
- Deficient in outside building storage space; no place to house equipment, commodities, and feed, and no place to safely store and mix chemicals – adequate building space would better protect employees, animals, and equipment
- Facility deficiencies: aging animal facilities- financial barriers inhibiting adoption of recommendations that would improve operational efficiency and safety (ventilation, freeze-up issues, lighting, manure handling, cow comfort, etc.); non-animal facilities- no buildings available to store equipment, and inadequate space for storage of feed and bedding; temporary buildings- semi-trailers being used for bedding storage and modular trailer being used as a temporary office building
- Potential partnerships between MARS and industry have been discouraged at times by UW faculty
- It is a challenge for UW researchers to market the value of UW knowledge to an industry that is inundated with enormous amounts of information from other sources

O.J. Noer Turfgrass Research Annual Report
Calendar Year 2014
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1. **Notable station achievements:** In the last 2 years we have renovated 41 research plots (over 25% of our available research space) for departmental studies. The renovations include demolishing or killing old studies, preparing soil, prepping seedbed, acquiring all supplies and seed, planting, and grow-in.

   Continue to acquire approximately $10,000 in donations of equipment and supplies, from industry, for operation of the facility.

   Building our pesticide management facility, 5 years ago, continues to stand out as one of the larger accomplishments for support of the departments that use our facility.

   Housing and support of the Turfgrass Diagnostic Lab at our station serves both industry and the public's needs.

   We annually conduct very successful industry and public open houses/research days at the facility.

2. **Number of research projects:** 50 Research Projects

3. **Change:** We went from four core departments working out of the facility, down to two departments five years ago, and are now back to three. The three departments are realizing they may not get the fourth department back and are thus working harder to cover all the needs that the industry and public asks of them.

4. **Goals for the coming year:** Continue to renovate abandoned and currently unusable research plots so they can be used for the future.
   Change several high maintenance areas into ones that can be managed with less input of time and labor, while still maintaining a pleasant looking and operating facility.

5. **Areas of concern and challenges:** Convincing departments to contribute more to the operation of the facility. We all work pretty well together but our nice facility can't continue to be what it is if both the university and the departments cut back.

Peninsular ARS Annual Report
Calendar Year 2014
March 2, 2014

Station Description
Station staff initiates fruit research and outreach efforts to support state and local fruit industries. Station research staff also coordinates projects with UW-Madison Departments, including Horticulture, Entomology, Agronomy, and Plant Pathology within the College of Agricultural and Life Sciences. The Peninsular Station is also home to the NRSP-6 US Potato Genebank, which maintains the world's largest collection of wild and cultivated potato species. The US Potato Genebank's mission is to collect, classify, preserve, evaluate and distribute nearly 5,000 samples of more than 150 potato species. The Genebank coordinates potato germplasm resources for scientists and breeders around the world. We also partner with Door County and Kewaunee County Extension Offices to coordinate extension and outreach efforts aimed at commercial tree fruit producers. Our Station is also the site of "The Garden Door", a cooperative project with the Door County Master Gardener's Association

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1. **Notable station achievements:** The station received an increase in extension funding from Door and Kewaunee counties totaling $20,500, up from $8,500. These funds support local outreach projects such as the web based Enviro-weather IPM and production management program, commercial orchard scouting project, and both on-farm and PARS based research and demonstration projects.

2. **Number of research projects:** 5 Tart cherry: 1 entomology, 3 horticulture, 1 plant pathology
   6 Apple: 1 entomology, 5 horticulture
   4 Grape: 2 horticulture, 2 plant pathology
   1 Potato: NRSP-6: United States Potato Genebank
   5 Small grain: 1 agronomy, 4 UWEXT

3. **Change:** A number of projects that, in the past, were headed by campus faculty PIs have been taken over by station academic staff. Some have not been sustained, like processing vegetable and alternative crop trials, whereas others like the tree fruit NC140 Regional Rootstock state coordinator status have continued.

4. **Goals for the coming year:** Economic and community development is an important part of our mission as we help support local and statewide fruit production with outreach based on the applied research results that we generate here at PARS. We hope to maintain and when possible increase support and implementation of applied fruit production projects in the areas including pest management, mechanization, profitable new crops and varieties and productivity increases.
   - Increase producer adaptation of cutting edge technology targeting food production systems and changing climate based on new and continuing evaluations of tart cherry, fresh market apple, cider apple and grape varieties along with research in tree fruit rootstock adaptability, high yielding dwarf apple rootstocks and high density plantings

aimed at improved quality and productivity. Testing of new varieties will become more important as older ones may be less suited to warmer temperatures, later falls and earlier springs.

- Continue station initiated projects and encourage faculty establishment of research on orchard and vineyard replant strategies along with floor management systems that increase fertility, moisture availability, reduce weed interference and decrease nutrient leaching.
- Continue efforts with IPM, sustainable production and increased productivity through adaptation of pest management techniques, genetics and new production systems. Studies range from efficacy testing of reduced risk and organic pesticides to developing and testing insect pest and disease scouting techniques.

5. **Areas of concern and challenges:** We continue to coordinate agronomic, tree and small fruit research projects and outreach programs with UW-Madison departments, including Horticulture, Entomology, Agronomy, and Plant Pathology within the College of Agricultural and Life Sciences. Unfortunately, increasing budget reductions and loss of faculty positions on campus has resulted in less support from these departments, the number and funding of new and existing projects and programs. On the other hand, the industries that we have traditionally worked with like apple, tart cherries and grapes still have a great need for the applied field research and outreach that we have provided over the years. Finally, the station itself has experienced loss in staffing due to past budget reductions leading to a reduction in staff and fewer projects and programs.

Rhinelander ARS Annual Report
Calendar Year 2014
March 2, 2014

1. **Notable Achievements**: We have had two new varieties released a fresh market red variety named Red Endeavor (W6002-1R) and a fresh market yellow flesh variety named Oneida Gold (W6703-1Y).

   We are also working on releasing a very promising chipping variety W5955-1 this year.

   Other promising upcoming varieties include W9433-1rus which is a fresh market russet and W8152-1rus which is a processing russet which has a low acrylamide level.

   We are increasing our collaborations with growers across America and Canada.

   We have extensively remodeled two of our greenhouses the first was to ensure optimum reduction and elimination of insect pressure. The second was to efficiently grow and maintain our parent population for breeding purposes.

   We are generating up to 30 tons of potatoes that would normally be disposed of, due to our selection process to food pantries in the northern ½ of the state. We held our 4th annual potato picking evening using volunteers to pick potatoes for the local food pantry and to bring awareness of the station to the general public.

   We made our conference room available to the Farm Service Agency for a meeting, which again brings the facility in the public eye.

2. **Number of Research Projects**: Support for the UW Potato breeding program. Which includes the crossing, breeding growing, trialing and testing potato varieties to develop new lines of potatoes for industry and markets.

   Great Lakes Bio Energy Research Project which is a long term study of Bio energy cropping systems and the feasibility of using hybrid poplars and willows trees as bio energy fuels.

3. **Change**: The station Superintendent retiring has left a big hole in in our station but with our restructuring of the station management and implementing changes such as moving Scott into the Agriculture Supervisor position we have been able to keep moving forward. We have also lost an AERO-Obj permanent employee and have been using LTE and temporary help to keep us moving forward.

   We have hired a new Potato Researcher Specialist who is starting March 2nd. We had advertisements posted and hoped to hire an AERO but will have to wait on that due to budget restraints.

We have added new irrigation upgrade to our tower property which allows more efficient irrigation and the addition of a center pivot to our north field N1-N3 has increased our efficiency and decreased our labor needs in that aspect. We also converted our Rinke linear pivot system N5-N7 to a functional center pivot system.

We have initiated a completely new procedure of leaf testing instead of sprout testing potatoes to help reduce the incidents of potato virus Y in our field planting.

We have initiated a new procedure called the 2nd Wave which is a greenhouse grown replication of our Field Year One (FY1) material, this will be planted and multiplied in the greenhouse in FY2 and allow us to have clean greenhouse seed for FY3 planting when we start our trials.

We have painted every room and even the basement in the main building, as well as cleaning out old files to give us a fresh outlook.

4. **Goals for the Upcoming Year**: Bring more awareness to the station by allowing the use of our conference room to small groups and by again having a 5th Potato Picking Evening. We will use left-over seed and volunteers to plant and harvest for the food pantries.

   Continuation of developing and releasing new potato varieties for the fresh, processing and specialty markets. Transitioning to our new management structure which includes our new Agricultural Supervisor and new Potato Researcher Specialist and other staff members to continue to provide the support needed to implement and maintain the UW Potato Breeding Program.

   Establishment of a clover cover crop after oats to improve soil health and fertility.

5. **Areas of Concern and Challenges**: Keeping the station performing at an efficient level with less resources.

   Hopeful hiring of the permanent AERO employee for the farm.

   Upgrading the electrical wiring in one of the Greenhouses.

   We really could use a small dump truck for our work.

Spooner ARS Annual Report
Calandar Year 2014
March 2, 2015

Notable Achievements:
Served as the only source of science based information on dairy sheep production throughout North America.

Presented at the 2014 Indianhead Sheep Breeders Association Shepherd's Clinic and at the 2014 Wisconsin Sheep and Wool Festival; Helped organize the Wisconsin Dairy Sheep Summit. Planned and organized the 62nd annual Spooner Sheep Day.

Secured a new contract for sale of the dairy sheep milk from the station.

The Station Demonstration Garden received 1st Place Award for Category II in the All American Selection Landscape Design Contest.

Built and utilized a new, larger field roller to improve alfalfa and soybean fields.

Purchased and installed a corn grain drier, greatly improving harvest efficiency and reducing drying costs.

Number of Research Projects:
The Spooner Station conducted 17 field crop research trials, 3 fruit crop trials, and 6 animal research trials during 2014.

The Station also maintained 20 organic acres of land for potential future research needs

Change:
Increased efficiency of the sheep operations including adjusting how we store and feed forages and eliminating some unnecessary practices to reduce costs, minimize stress to the animals and maximize production.

Designed and constructed a new lane and gate system at the sheep barn to ease ewe sorting and group management during milking and to reduce labor.

Changed the forage storage and feeding systems by storing first crop in silage bags (rather than in upright silo) to reduce feed waste and cost of feeding,. This has allowed us to sell excess forage.

Goals for the Upcoming Year:
Work with the American Sheep Industry (the national sheep commodity group) to obtain federal grant funding for dairy sheep research

Obtain a TMR mixer to initiate dairy sheep nutrition research with different feedstuffs on the station.

Help organize and host the 2015 Dairy Sheep Association of North America Symposium in Madison, WI.

Update cropping equipment where possible, including a new combine weigh system, build a soybean plot planter, purchase a gravity box.

Install a feed pad for silage bags to improve forage storage and harvest options

Install a composting structure for composting animal mortalities.

Areas of Concern and Challenges:
Impact of budget reductions on the station

Securing funding to update the sheep facilities and infrastructure, in particular, the milking parlor which has not received an update since milking began in 1996. We would also like to update the sheep housing facilities in order to conduct nutrition research trials for the flock.

Maintain a productive relationship with the UW-Extension Agents housed on the station as staffing changes occur, both with Spooner ARS and UW-Extension programs.

West Madison ARS Annual Report
Calendar Year 2014
March 2, 2014

1. **Notable station achievements:** Highlight noteworthy activities as they relate to the station mission/purpose
   Several significant events occurred at WMARS in 2014. Field days were frequent and well attended including the station's Urban Horticulture Day with well over 200 people in attendance, as well as the monthly vegetable tasting with Julie Dawson's program attracting 40-50 people at each tasting. The gardens hosted numerous tours and walks as well for fruit, vegetable and flower enthusiast and student groups. Station food donations to local food bank amounted to nearly 9 tons of fresh produce. Season-extension technology has been gaining momentum with a second hoop house constructed. Maintaining organic certified land has increased research projects and another 15 ac. are in transition to become organic in 2016. Expanding irrigation infrastructure (guns, sprinklers, drip lines, mobile and semi-permanent water tanks, has allowed more and more research success and flexibility for researchers.

2. **Number of research projects:** Estimate as best you can the number of crop and animal projects on your station. There is an estimated 35 field research projects on the station and include 22 faculty/PIs. Research includes several vegetable breeding and variety trials (i.e. potatoes, sweet corn, carrots, onions, tomatoes and many other veggies) on about 15 ac. of both organic and conventional ground (Rouse, Tracy, Goldman, Dawson, Nienhaus, Simon, Jansky). Other plant breeding in research nurseries utilizes 66 acres/yr and is primarily on corn and small grains (DeLeon, Mochon, Doebly, Bingham). Weed control experiments with mulch and cover crops are integral to the organic acreage and horticultural gardens. Plant Pathology research covers an array of crops including soybeans, grapes, potatoes, and corn on about 10 acres (Smith/Grau, McManus, Rouse, Silva). Fruit research is focused on local production of grapes and raspberries. Other projects include the Biocore Prairie effort at Eagle Heights and both annual and perennial ornamental nurseries for various plant and flower groups in the state (Daylily Society, WI Peony Society, Commercial Flower Growers of WI).

3. **Change**: Highlight significant trends or changes from previous years that are creating opportunities or challenges.

   Urban sprawl and development pressures continue, but have been dealt with by using innovative management techniques. Composting raw manure has alleviated nuisance complaints from the neighbors and potential drift from dust and pesticide has been reduced by growing no spray alfalfa buffers next to residential and commercial areas. Education consists of tractor safety and Implement of Husbandry protocols, as well as continuing educational for staff, researchers and the general public. Recent trends have seen an expansion of urban agriculture on the station. This is a good for the community to visit and learn practices for producing one's own food.

Station access has been much improved with the completion of the construction on Mineral Point Rd and a new sidewalk along the gardens as well as an upgrade to a field entrance along Pleasant View with gravel and asphalt.

The compost operation has been expanding to not only include leaf and manure recycling but also food waste from campus and related institutions (Hospitals, Camp Randall, student cafeterias, etc). This spring we will take the food waste compost full circle by returning this to campus areas where it originated and use it for a soil amendment. A challenge before this can happen is to clean as plastic and other non-degradable items out of the waste stream, this will be accomplished by a screening process. We were successful in getting contributions from the UW Hospitals and the UW Physical Plant to purchase a screener to accomplish this.

4. **Goals for the coming year:**

Successful production and research outcomes
No accidents
Function under duress and extremely tight budgets
Keep promoting station with field days/outreach
Engaging new researchers
Connect with unique partners (WI Historical Society, UW Hospitals

5. **Areas of concern and challenges:**

With continual decreases in state support, funding the labor necessary for the labor-intensive urban agriculture becomes challenging. Providing storage facilities for each researcher is increasingly difficult.
Nearly 40% the station's acres are part of the background rotation required by crop researchers. Loss of land limits our ability to support animal and field crop research (forced to use short rotations, all annual crops).
Frequent trips to campus with feed/manure becomes challenging when maneuvering large trucks, tractors and implements amongst people and traffic. We have not had any accidents while doing this and we want to continue with this record.