EXCITING ERA
New Facilities, New Degree Offerings

PARTNERSHIP IN ACTION
Producers & Researchers Collaborate At Research Farms

ALSO SPOTLIGHTING...
McCory Gardens, Ag Heritage Museum, Commodity Events
FROM THE DEAN:
Managing Change

"The world as we have created it is a process of our thinking.
It cannot be changed without changing our thinking." – Albert Einstein

This last May marked the completion of my fifth year as Dean of the College of Agriculture and Biological Sciences. As I reflect on this exciting and rewarding period in my life, I am amazed at the level of change that has taken place in all aspects of the College. Certainly the majority has been very positive. But some of it was certainly quite difficult.

The drivers of the change varied greatly. Some individuals changed jobs to enhance their personal well-being but in doing so dramatically impacted a particular area of the College. State or Federal budget decisions based on stark financial realities had a huge impact on what the College could, and couldn’t, continue to do. They also spurred the creative energy to find new and more efficient ways of accomplishing our core missions. I am proud to say that the solutions to the challenges were almost always the result of collaborative teamwork within the College. And, I am proud of the individuals who have stepped forward with creative ideas and grateful for those who were willing to make tough decisions with me.

The academic programs in the College have continued to grow in student numbers and degree options for students. This past academic year, the College of Agriculture and Biological Sciences was the largest College on campus, with over 2,550 undergraduate students. Curriculums in almost all of the majors have been reviewed and updated. We have new majors in Food Science and Natural Resource Law Enforcement and new minors in Meat Science and Precision Agriculture. We are actively investigating others.

We have expanded the travel abroad opportunities for our students as well as the opportunities for undergraduate research and internships. We are home to many of the pre-professional programs on campus, and I am happy to report that acceptance into professional schools like Colleges of medicine and veterinary medicine are at an all-time high. Experiential learning remains an integral part of many of our programs with ready access to lab and work experiences. We are continually heartened by the success graduates of our many programs have in their chosen fields of employment and those who have the opportunity to return to the farm or ranch and work in agricultural production.

While the number of our research faculty has fallen, research productivity in terms of securing outside grants as increased to over $18.5 million. These dollars are powering the discovery of new knowledge and innovative problem solving from basic biology to production agriculture. We are extremely grateful for the increased investment of our stakeholders from commodity organizations and our state and federal partners. While industry investment in research in the College is important and growing, it still only represents approximately 7% of our research expenditures.

The new model for SDSU Extension has proven itself to be an exciting and effective alternative to the traditional model. The 4-H program has grown for the fourth consecutive year with over 9,000 members in traditional clubs and 39,000 additional youth who have been reached by non-traditional, but very effective 4-H youth programming. Last year, the iGrow learning platform had nearly 600,000 users who viewed almost one million pages of information. In addition to continually building iGrow, our faculty and field specialists have written books on the best management practices on the production of wheat, corn and soybeans and technical guides on everything from trees to Farmers Markets.

We are committed to also rebuild the teaching and research infrastructure of the College. Thanks to the generosity of literally hundreds of donors, and the leadership of our University, Board of Regents, State Legislators and our Governor, we are well on our way. We have new facilities for our plant breeding and dairy manufacturing programs and remodeled facilities for Biology and Dairy Science. The Olson Biochem wing of the Animal Science complex has been remodeled into research labs for multiple departments. Construction is underway on the Cow-Calf Education and Research facility and our new e-Trading Laboratory. It will begin soon on our Swine Education and Research facility, and our Plant Science Support facility (Seedhouse), and we hope to finish the Headhouse-Greenhouse project soon. This re-investment and building represents a true step change for the faculty, staff and students of the College. Plans are being developed for additional projects that reach across the entire College.

Growing up, I was struck by the enormity of change witnessed by my Grandfather Lamoureaux, who rode as a cowboy in the last open range roundups in the Dakotas, but also lived to witness Neil Armstrong landing on the moon. Much of the miraculous change in our lives today is as invisible as the Internet but as dramatic as cures for some forms of cancer. The College of Agriculture and Biological Sciences at SDSU is poised to prepare young people with education, unbiased research, and access to information for a world makes the change in my Grandfather’s life seem small. But knowing him, he would be on the front line of adoption, just as the young people of today are!

BARRY H. DUNN, PH.D
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Exciting New Era Underway
New Facilities & New Degree Offerings Coming To Fruition

ANTICIPATION IS MOUNTING within SDSU’s College of Agriculture and Biological Sciences – and for good reason. Excavation and construction is underway on two new facilities and plans are being implemented to offer new majors and a new minor within the College for the 2015-16 school year.

New facilities being constructed include the Cow-Calf Education and Research Facility, which will be located along Western Avenue 2 miles northwest of the campus Animal Science Complex, and the Swine Education and Research Facility, which will be located at the existing Swine Unit site also north of campus along Medary Avenue.

Additionally, with the Fall 2015 semester, the College of Agriculture and Biological Sciences has received approval from the South Dakota Board of Regents to offer expanded degree program coursework allowing students to pursue bachelor of science degrees for the first time in natural resources law enforcement and food science, and a new minor in meat science. As well, a minor in precision agriculture will be offered for the second year; it was implemented during the 2014-15 school year, and a precision ag major has been proposed.

Additionally, the Board of Regents has approved a master of science degree in agricultural education. Once implemented, SDSU anticipates graduating five to seven students from the program each year, which will also be delivered online.

The new degree offerings are intended to help address the increasing demand for ag and natural resource graduates in the industry. For example, the bachelor of science degree in natural resources law enforcement at SDSU will prepare students for careers as conservation officers, federal wildlife officers, park rangers, and game wardens. The new degree is in response to discussions with staff from the state’s Game, Fish and Parks Department and the U.S. Fish and Wildlife Service, who say they are challenged to find qualified applicants for law enforcement positions. Only four institutions across the country offer a similar degree. SDSU estimates it will have 20 graduates annually from the program after full implementation.
FUTURE VISION
The investment and expansion into the College's facilities and curriculum are part of the continuing effort to prepare students for the increasing demands that will be placed on agriculture in the future. Projections call for the global population to expand to more than 9 billion people by the year 2050.

"With the world's population growing, one thing we know is that all those people will need food," says Don Marshall, Associate Dean for Academic Programs in SDSU's College of Agriculture and Biological Sciences. As well, Marshall notes an increased need for the myriad of products, research and industry related to agriculture, which also means career growth for the ag sector (See page 5 for USDA's ag job outlook).

Marshall reports that many of the traditional career areas, such as agronomy, livestock, natural resources, financial institutions, and food and dairy processing, are still in demand, but new career areas are also growing. He cites careers in food safety, biofuels, genetic technology, and precision farming as emerging areas where more graduates are needed.

Regarding the two new facilities under construction, SDSU Animal Science Department Head Joe Cassady says, "These modern, state-of-the-art facilities are critical to our goal of continuing to provide hands-on opportunities for students, as well as for conducting industry research and developing a well-rounded, nationally respected animal science program."

Cassady notes that it is becoming increasingly common to have animal science students who have little - if any - hands-on livestock experience, or they have only worked with one species. Thus, he emphasizes the importance of the Department being able to offer opportunities for students to work with beef, sheep, swine and equine for classroom and research projects.

FACILITY DETAILS
Excavation work began on the Cow-Calf Education and Research facility site in

Pictured: The Cow-Calf Education and Research facility being built north of Brookings began taking shape this summer. Faculty and students will be making use of the state-of-the-art facility by Spring 2016.
April 2015. Cassady anticipates the work to move quickly and hopes to be making use of the new facility next spring.

The new complex will include a large building that houses a classroom, cow-calf manager’s office, a small lab, an area with an alley and chute for processing cattle, and a calving barn. Additionally, a monoslope barn will contain four pens that each have 12 electronic feed bunks and two electronic waterers. The high-tech bunks and waterers will facilitate detailed feed consumption data collection and allow researchers to apply multiple treatments within a pen. A commodity shed with four bays for feed storage and bunker silos will also be constructed. The facility is surrounded by twelve 10-acre paddocks that have already been seeded to cool and warm season grasses. These replicated pastures will also facilitate various research projects.

Cassady says they could potentially calve cows at the new facility next spring, but depending on weather conditions, he may wait and allow the pastures to get well established. “We want to give our pastures a good start,” he says.

Presently, the SDSU cow-calf herd includes 110 Angus and SimAngus cows that calve each spring. Bulls are developed and sold at the annual SDSU spring bull sale, while replacement heifers are retained for the herd or utilized for other research projects.

Cassady says that with the new Cow-Calf facility, there may be an opportunity to increase the herd size to 150 cows, which would create a larger pool of calves to utilize for research projects in the monoslope barn. There is also space and biosecurity measures built into the monoslope barn that will allow off-site cattle to be brought in for research projects.

Excavation on the new Swine Education and Research Facility began in July at the current Swine Unit. Plans call for a sow teaching/intensive research building and wean-to-finish complex that would each allow for enhanced teaching and research activities. The sow building will include a classroom, boar collection/ AI room, surgery suite, gestation room and two farrowing rooms, and will feature a hallway through the center with large windows to allow public viewing into the animal areas for outreach and education programs. The 1,200-head wean-to-finish barn will contain four 300-head rooms designed for nutrition and ag engineering research projects, and will also include some public viewing areas.

Cassady shares that construction of an additional 1,200-head wean-to-finish barn, located off-campus in Moody County near I-29 Exit 121, is also being proposed. He explains that this facility would be fundamentally different from the campus wean-to-finish barn. “An off-site barn would allow for bringing in pigs representing different genetics for additional contract research and it reduces biosecurity concerns,” Cassady says.

He continues, “The on-site wean-to-finish barn will have 4-6 pigs per pen and will be designed for discovery-type research using pigs farrowed from SDSU’s sow herd. The off-site wean-to-finish barn will mimic a commercial facility and be intended more to test proof-of-concept research in a larger setting.”

All total, the wheels are in motion for these new curriculum offerings and new facilities to come to fruition during the 2015-16 academic year. Cassady concludes, “We look forward to making use of these facilities to benefit our students, faculty, and stakeholders.”
USDA has released a new report showing tremendous demand for college graduates with degrees in agricultural programs. The report cites an estimated 57,900 high-skilled job openings annually in the food, agriculture, renewable natural resources, and environment fields in the United States.

The employment outlook report released by USDA's National Institute of Food and Agriculture (NIFA) and Purdue University goes on to identify that there is an average of 35,400 new U.S. graduates with a bachelor's degree or higher in agriculture-related fields, which is 22,500 short of the jobs available annually.

"There is incredible opportunity for highly skilled jobs in agriculture," said Secretary Tom Vilsack of these findings. "Those receiving degrees in agricultural fields can expect to have ample career opportunities. Not only will those who study agriculture be likely to get well-paying jobs upon graduation, they will also have the satisfaction of working in a field that addresses some of the world's most pressing challenges. These jobs will only become more important as we continue to develop solutions to feed more than 9 billion people by 2050."

The report projects almost half of the job opportunities will be in management and business. Another 27 percent will be in science, technology, engineering, and mathematics (STEM) areas. Jobs in food and biomaterials production will make up 15 percent, and 12 percent of the openings will be in education, communication, and governmental services.

The report also shows that women make up more than half of the food, agriculture, renewable natural resources, and environment higher education graduates in the United States.

Other highlights from the report include:

- While most employers prefer to hire graduates of food, agriculture, renewable natural resources, and environment programs, graduates from these programs only fill about 60 percent of the expected annual openings. Even as enrollments in these programs increase and the job market becomes somewhat more competitive, good employment opportunities for the next five years are expected.

- Expect to see a strong employment market for e-commerce managers and marketing agents, ecosystem managers, agricultural science and business educators, crop advisors, and pest control specialists.

- Job opportunities in STEM areas are expected to grow. Expect the strongest job market for plant scientists, food scientists, sustainable biomaterials specialists, water resources scientists and engineers, precision agriculture specialists, and veterinarians.

The report, Employment Opportunities for College Graduates in Food, Agriculture, Renewable Natural Resources, and the Environment, United States, 2015–2020, can be viewed at this link: https://www.purdue.edu/usda/employment/.
HAVING PROCESSES IN PLACE TO safeguard human health – and to protect the food animal industries, companion animals, and wildlife and fisheries populations – in our state and nation is something Americans expect.

When an animal disease outbreak occurs – such as the recent avian influenza and dog flu concerns garnering headlines, or last year’s porcine epidemic diarrhea virus (PEDV) among hogs – producers and consumers seek assistance and assurances that the outbreak is being managed and that human health and the food supply are being protected.

For South Dakota and the surrounding region, the task of disease diagnosis and development of prevention and treatment approaches lies with the South Dakota Animal Disease Research and Diagnostic Laboratory (ADRDL), which is housed within the Veterinary & Biomedical Sciences Department on the SDSU campus. Department Head Jane Hennings, DVM-MS, serves a dual role as the ADRDL’s director.

Hennings calls the work done within the current lab “vital” as it contributes to animal health and protection of human health and food safety locally, nationally and globally. In addition to providing timely veterinary diagnostic services and disease research that support veterinarians and public health officials, the ADRDL also offers student training. It is the only American Association of Veterinary Laboratory Diagnosticians (AAVLD) accredited laboratory in the state; and currently, only 30 states have fully accredited labs nationwide.

Throughout spring 2015 ADRDL staff have worked overtime as one of the leading labs diagnosing avian influenza outbreaks from submitted samples. In 2013 and 2014, when the PEDV was spreading quickly throughout hog operations in the multi-state region, ADRDL scientists help develop and commercialize a rapid polymerase chain reaction (PCR) test which detects the genetic material of the virus.

As an agricultural state, an animal disease outbreak in any part of South Dakota would be devastating for our state’s economy. We need to be prepared, as a state, to handle a major disease outbreak by giving veterinarians and producers the information they need to prevent disease and, if a disease does occur, to address it quickly.

To meet the ever changing animal diseases and the increased need for capacity, expansion and modernization in the ADRDL is essential.

The ADRDL and the animal health experts are the first line of defense to identifying and controlling a major disease outbreak. That is not something we should be relying on another state to do for us.

- Jennifer Stalley, Executive Director, South Dakota Veterinary Medical Association
Services Provided by South Dakota’s Animal Disease Research and Diagnostic Laboratory

- Rapid veterinary diagnosis of livestock disease outbreaks, as well as testing animals for rabies and other diseases that pass from animals to humans.
- Protect human health via the FDA Food Emergency Response Network through routine testing of the food supply.
- Disease surveillance and development of diagnostic tests for new diseases, as well as provide preventative disease solutions.
- Foster economic development through biomedical invention disclosures (62 to date); patent applications (147 to date); patents (73 to date); commercial licenses (19 to date); and licenses with local start ups (5 to date) that are providing jobs for South Dakota graduates.

Within the building, and quality control issues that impact the lab’s overall ability to achieve its mission to protect animal health and the region’s multi-billion dollar livestock industry. The current facility was last updated 22 years ago in 1993.

Current deficiencies of the Animal Disease Research and Diagnostic Laboratory include:

- Lack of the necessary Biosafety Level 3 facilities to protect South Dakota’s animal agricultural and food processing industries from infectious disease crises. Currently the lab only has a Biosafety Level 2 designation, which is not adequate to handle highly contagious diseases, some of which are endemic in SD;
- Inadequate existing facilities and systems for current and projected diagnostic tests;
- Outdated facilities, technology and building systems to adequately contain infectious disease, and protect employee health and safety, and compliance with environmental regulations.

Support for a multi-million dollar expansion and modernization of the existing facility is being sought, which Hennings says would allow for handling an increased number of samples for diagnostic testing, would ensure worker safety, enhance biosecurity and allow for research to develop new diagnostic tests and disease control methods. It would also allow for more “hands on” training of individuals pursuing veterinary, science, technology, and public health roles.

She notes that in 2015, the lab has seen a 27% increase in diagnostic tests compared to the last year. This growth has been due to several factors, some of which have been the laboratory testing for avian influenza this past year and because of emerging diseases such as PEDV. Additionally, the lab now offers molecular diagnostics and food safety testing to better serve clients – these are new services which were not planned for in the 1993 facility. These services also increase the need for more space.

Funds are being sought to commit $4.62 million annually to renovate the 39,000 square feet of existing laboratory space and add 46,000 square feet of laboratory space including Biosafety Level 3 space, and service a 25-year, $44 million bond ($3.3 million annually) as well as the lab’s annual maintenance expenses of $1.32 million. Or, an alternative would be to build equivalent new laboratory space.

For more information about the expansion and modernization effort contact, Jane. hennings@sdstate.edu or call (605)688-5171.
COORDINATING A MEETING THAT BRINGS together South Dakota’s Secretary of Agriculture, Natural Resources Conservation Service (NRCS) State Conservationist, State Executive Director for USDA’s Farm Service Agency (FSA) and SDSU’s Dean of the College of Agriculture and Biological Sciences may seem like an impossible feat, given their leadership responsibilities and busy travel schedules.

But nearly two years ago, this quartet of ag leaders committed to meeting quarterly to discuss issues, concerns and opportunities related to South Dakota agriculture. SDSU’s Barry Dunn, Dean of the College of Agriculture and Biological Sciences, initiated these informal meetings to enhance communication and collaboration among each of the different entities they lead.

"South Dakota agriculture needs leaders working together to utilize the state’s resources wisely and to aptly prepare our state for the future."

– Jeff Zimprich, NRCS State Conservationist

Joining Dunn for the meetings that the group refers to as their "Agency Head Roundtable," are Lucas Lentsch, Secretary of Agriculture; Jeff Zimprich, NRCS State Conservationist; and Craig Schaunaman, FSA State Executive Director. They typically meet in Huron for a three-hour discussion and share updates on current activities within their organization, as well as discuss issues occurring across the state, within other states, and within government policy.

Of their meetings, Dunn says, "There are many common threads between each of our positions. First and foremost, of course, is South Dakota agriculture. The opportunity to visit, compare notes, discuss challenges, and to plan for the benefit of the state we love has become important to us all. These quarterly meetings help each of us do our jobs more effectively."

He adds, "We also spend some time 'looking down the road' anticipating situations that may be coming and how we can work together to help each other – and each other's organizations – in serving South Dakota."

Schaunaman counts the enhanced communication as a benefit from the sessions. He says, "No resolutions are made, but these meetings provide an opportunity for each of us to share insight and have open and honest discussion about the topics that impact South Dakota agriculture." He notes that topics discussed cover the gamut from livestock production, the economy, and implementation of the Farm Bill to water quality, wildlife issues and environmental concerns.

Likewise, Zimprich appreciates the opportunity to discuss and collaborate on the most critical issues facing agriculture and South Dakota’s resources. He adds, "All of us are busy, but having these meetings facilitates the opportunity to discuss what is impacting each of our organizations and has opened the door for more collaboration to occur between our organizations."

Lentsch adds, "Participating in the roundtable provides an opportunity to cover a broad range of issues with policy and programmatic experts. It’s an honor to spend time with them. This type of collaboration helps us all work for the betterment of agriculture in South Dakota."

Zimprich says, "South Dakota agriculture needs leaders working together to utilize the state’s resources wisely and to aptly prepare our state for the future. Our aim is to be more forward-looking and be less reactive."

He concludes, "I think it is important to remember this effort is young and we are working on difficult issues. They are not solved after one meeting, but collaboration is happening."
IN THIS PAST YEAR, as the new director of the South Dakota Agricultural Heritage Museum located on the SDSU campus, I have met with members of the community, teachers, students, farmers and business leaders to gain a better understanding about the history of the museum and its role in the community.

I discovered that the museum is a hidden gem with lots of potential to make a greater impact in the community. Even though it had been stagnant for several years, it still maintained a strong core of support. We are in a position where we can grow and thrive by tapping the assets to fulfill community needs.

For over a decade, museums nationwide have shifted away from being temples of knowledge where artifacts were ‘worshipped’ by an elite few – or more commonly found in history museums, a place visitors looked at objects with nostalgia. Today, museums are educational community centers. We still collect, preserve and interpret history, but the approach is to use the collection as an educational tool to enrich and transform lives.

How does this relate to the South Dakota Agricultural Heritage Museum?
In the fall of 2014, we started to develop a new strategic plan. We needed to answer the questions of why do we exist, who is our audience, what are their expectations. We began by gathering data from focus groups across the state and surveys from SDSU students, professors and SDAHM members. We asked what they enjoyed about museums in general and what they would like to see at the SD Ag Heritage Museum.

Many of the comments we received from the general public stated that they wanted more cultural diversity, to incorporate science topics, and to discuss modern topics regarding agriculture.

How do we address the audience desires and still maintain the importance of the history?
We are shifting how we develop exhibits and interpret agriculture to an audience that might not have a connection to farming. With less than 2% of the US population involved directly in farming, the museum has the opportunity to educate 98% of the population on how diverse, exciting and essential the history, culture and science of agriculture can be.

We are broadening our scope of interpretation to include the full spectrum of agricultural history – from the moment humans domesticated plants in South Dakota to the present. We are interweaving science and culture with the history to present a more holistic view of agriculture in our exhibits and programing. We believe this will resonate more with the community statewide and broaden our visitor demographic.

Every person has a connection to agriculture through food and fiber. The South Dakota Agricultural Heritage Museum’s goal is to create an ecology of learning where families explore the fascinating world of South Dakota agriculture and strengthen that connection.
“What if…” That’s a question farmers and ranchers often ponder on their own farms and ranches when considering changes in crop and livestock production and management practices. What if I changed my crop rotation? What if I grazed this cover crop? What if I tried to increase my yields?

Fortunately for South Dakota’s farmers, two unique research farms are in operation near Beresford and Pierre with the purpose of conducting experiments to provide ideas and answers to those types of questions. The Southeast Research Farm, located near Beresford, and the Dakota Lakes Research Farm, located near Pierre, represent cooperative partnerships between farmers from each respective region working with SDSU Agricultural Experiment Station (AES) researchers to pose questions and seek solutions with the goal of benefitting and strengthening the state’s ag industry.

**FARMER-DRIVEN**

The Southeast Research Farm’s beginnings can be traced back to 1955, when a group of progressive farmers began efforts to create an association that would be concerned with agricultural research in southeast South Dakota. In May 1956, a non-profit organization, the Southeast Experiment Farm Corporation, was formed. The purpose of the corporation was to acquire and disseminate information concerning crop and livestock production.

Today, the corporation remains in place with an active Board of Directors comprised of farmers from the region who are elected to two-year terms; SDSU’s Peter Sexton serves as the farm’s manager. The corporation owns much of the land and facilities that current research is conducted on. An annual meeting is held each year to allow members to review the activities of the corporation and hear reports on progress of research projects.
and make suggestions on research that may need to be conducted to resolve upcoming problems. Because the corporation is non-profit, all funds generated by the corporation are used to advance research through improvement of buildings and facilities located at the station.

Similarly, the not-for-profit Dakota Lakes Research Farm Corporation Board of Directors comprised of farmers from the region works with SDSU professor Dwayne Beck, who serves as farm manager, to plan and prioritize the research conducted near Pierre, and the corporation owns the land, fixed facilities and much of the field equipment. The Dakota Lakes Research Farm Corporation organized in the early 1980's. The farm began operation in 1990 and has been exclusively no-till since that time.

"It's a unique system. Those [farmers] who put these research farms together were far-sighted," says Marv Schumacher, who farms near Pierre and currently serves as chairman of the Dakota Lakes Research Farm Corporation Board of Directors.

Schumacher values the results produced by Dakota Lakes saying, "It's an opportunity for me to see experiments and adapt and apply the findings to my own farm." Marv's operation is totally crops.

He adds, "So much research today is grant-based and short-term. At Dakota Lakes, we are focusing on research that is long-term, because farmers and ranchers are in business for the long-term."

Schumacher also takes pride in the innovative, cutting edge approach the Dakota Lakes Board and SDSU staff have taken toward research. He shares, "I am personally amazed at some of the work being done. As a Board we brainstorm about different research ideas. I often think I’ll never see it happen and 3 to 5 years later we are trying it."

Alvin Novak, who farms near Yankton, is currently chairman of the Southeast Experiment Farm Corporation Board, and has been involved with the farm for more than two decades. Asked why the Southeast Research Farm is important to him, Novak says, "I believe in the unbiased research being done. I'm a graduate of SDSU with a degree in agronomy, and after college I started going to the field days and tours. I can truly say I have never gone to a meeting where I didn't learn at least one thing."

Novak notes that the Southeast Research Farm is the only AES-associated field station in the state with both crops and livestock – cattle and hogs.

He notes that pioneering research has been done at the Southeast Research Farm related to odor control with hog confinement barns and vegetative treatment areas with runoff water from feedlots. Most recently, SDSU faculty and researchers worked with Raven Industries to develop a variable rate multi-hybrid planter prototype designed by Raven Industries engineers. The first-of-its-kind planter allows farmers to place different varieties of seed based on the variety which is best for those specific growing conditions and soil types. It is now available commercially through Kinzie Manufacturing.

"Our Board has been very involved in helping set research priorities for the farm, and I'm so impressed with their visionary voices," says Novak. He adds, "We have to be on the leading edge with the research being done for ag producers in the future."

South Dakota Ag Experiment Field Stations are also operated in South Dakota near Cottonwood, Antelope, Oak Lake and South Shore. Each summer and fall, field days are held at the stations to provide the public with a first-hand look at research and an opportunity to interact with the scientists involved.

### COLLABORATION CRITICAL

Daniel Scholl, Associate Dean for Research and Director of the Agriculture Experiment Station at SDSU, emphasizes the value that these research farms provide, saying, "These stations provide an opportunity for relevant, long-term research to be conducted in environments which mirror the growing conditions and climate of our state's farmers." He also notes that the research farms allow for research to be conducted on a land scale comparable to a typical South Dakota farm.

Scholl says the aim is to conduct studies now that will benefit South Dakota farming 10 to 15 years in the future. Southeast Research Farm manager Peter Sexton, says the involvement of the Board of Directors plays an important role in guiding those research efforts and resource allocations. "Because our board members represent farming communities in this part of state, they help keep the research practical and applicable."

At Dakota Lakes, Dwayne Beck shares that the focus has also always been on conducting research that is very applied for farms in the region. They have – and will continue – to conduct studies related to developing integrated farming systems that maximize efficiency while minimizing negative environmental impacts. A recent $1 million grant from the Howard G. Buffet Foundation is also facilitating new projects looking at use of seed coatings to enhance the performance of surface applied cover crops; development of self-propelled grazing cells to automate cattle management on the land, and evaluating the concept of improving the suitability of roadsides and other right-of-way areas for use by wildlife, pollinators, and butterflies.

At the Southeast Research Farm, research is continuing with the multi-hybrid planter and precision technology, as well as projects evaluating feedlot nutrition, integration of grazing cover crops, impact of tile drainage on crop yields and looking at nutrient movement in ground water, and many others.

The farm has also added a high tunnel greenhouse and is planning to expand new studies related to horticulture and fruit trees. "We see a lot of interest in this area, and it is an opportunity for young and beginning farmers to get started," explains Sexton.

The forthcoming data on each of these projects is yet to be determined, but board chairman Alvin Novak is optimistic about the work underway, saying, "I think there are going to be very important things that come out of the work being done for the future of ag."

www.sdstate.edu/abs
Coordinated Effort
SDSU’s John Ball Serves Dual Role To Benefit South Dakota’s Trees

“SOUTH DAKOTA IS A TOUGH PLACE TO BE A TREE,” notes John Ball. The avid arborist knows well the challenges—from prolonged drought to spring ice storms and flooding, as well as the October 2013 blizzard and mountain pine beetle that have both been a menace to trees in the Black Hills.

Ball is often on the front lines helping homeowners, landowners, urban administrators, and state and federal agencies take care of South Dakota’s trees. He has a shared appointment as a SDSU Extension Forester and a Forest Health Specialist for the South Dakota Department of Agriculture.

While the double-duty keeps Ball busy and crisscrossing the state, he says the collaborative effort between SDSU and the Department of Agriculture is beneficial for South Dakotans and the state’s trees.

“The advantage is that it simplifies questions as well as simplifies the distribution of information. Everything funnels in and out of one source. It also allows for catching things like an insect or disease concern early, and an alert can be shared with Extension staff, the Department of Ag and the public,” explains Ball.

As that expert source of information, Ball strives to communicate regularly with stakeholders. He distributes a weekly e-newsletter, aptly titled “The Weekly Update,” to share information about growing conditions and other tree issues in the state. It is distributed to county 4-H offices, district conservation offices, and forestry offices across the state. Ball also regularly posts tree care articles and informational videos on forestry and gardening that can be accessed on SDSU’s iGrow website.
Ball is a frequent teacher as well, often leading courses on campus, conducting tree care education programs for homeowners and landowners, and pursuing research. He has been involved in development of a logger education program and also oversees several arbor and forestry related certification programs, including the certified arborists program for urban environments, the certified tree worker program, and the electrical hazard awareness safety program – of which he is one of fewer than 20 qualified instructors in the nation.

One topic that has garnered much of Ball's time over the last 15 years is the mountain pine beetle in the Black Hills. Ball explains that it is a natural insect, so it will never be eliminated, instead the focus has been on identifying and implementing management practices to reduce its impact. Ball has worked with the United States Forest Service, Custer State Park and private landowners in this effort.

He reports, "We have been able to maintain certain stands of forest and protect them [from the pine beetle] through management." As well, Ball calls the experience gained "good training" for the impending arrival of the Emerald Ash Borer to the state, a beetle which attacks ash trees. "It's not here yet, but we know it has been found in Minnesota," says Ball. He says the existing management and coordination with agencies in South Dakota will be helpful in managing the bug when it does arrive.

Ball also notes that the cooperation that is occurring in South Dakota for statewide tree care is rather unique, and he shares, "When I travel to other states, there is usually a separation between their University and Department of Agriculture forestry specialists, and they envy our system."

To that end, Ball reiterates that the partnership between SDSU and the South Dakota Department of Agriculture for his dual appointment has fostered a streamlined approach to tree care in the state. "It allows us to stay on top of issues occurring and simplifies management. We have a communication network in place and can act quickly for the benefit of our trees and forests."

John Ball has also written a tree guide featuring more than 270 tree species, including fruit, nut, evergreens and ornamental trees, as well as windbreak and native trees. Titled Trees for the Northern Plains, the illustrated field guide includes more than 500 pages with hundreds of full color photos. Available at www.iGrow.org and click on "iGrow Store."
DURING HIS 21-YEAR CAREER with SDSU Extension, Dan Oedekoven has worn many hats. He began as an Ag and 4-H Extension Agent in Meade County in June 1994. He transitioned to the role of West River Area Farm Management Specialist in September 1998, then served as the West District Extension Supervisor, and in 2004 stepped forward to fulfill new duties as a Community Development Coordinator.

From his many experiences, in 2010 Oedekoven was tapped to provide leadership as the Director of the West River Ag Center in Rapid City. For the past five years, he has overseen staff, research and outreach efforts to provide information and education to assist western South Dakotans to sustain the land they live on, their communities, and the profitability of their farms and ranches.

Oedekoven retired from his SDSU leadership role on June 22, 2015, saying, “SDSU has great leadership in place. I feel it is a good time for a transition and to create opportunity for the next generation.”

Throughout his time with SDSU, Oedekoven witnessed much change within Extension, and prior to his retirement, he took a few moments to answer some questions about the past, present and future.

Q: SDSU EXTENSION MOVED TO A NEW, REGIONAL FORMAT IN 2011. HOW IS THAT WORKING?
A: “Change is hard. With the state and federal budget cuts that SDSU was facing, Extension had to change quickly to adjust. At the time, it was painful and difficult to understand. As a former community development specialist, I still feel badly that some communities lost individual educators in their counties. I realize that meant a loss of some leadership, expertise and incomes in those communities. But, it’s a trade-off. Even though those things were lost, we have gained a new regional system with awesome talent among our regional field specialists. I have seen their collaborative projects and research taking place across disciplines, across agencies, and across state lines. It’s exciting to see how SDSU Extension is evolving to be much better prepared to address the future.”

Q: WHAT HAS BEEN A HIGHLIGHT DURING YOUR TENURE WITH SDSU?
A: “With 20% of South Dakota’s population having a Native American background, we have worked hard to reach out to that audience. SDSU Extension now has a Native American program leader and we are managing our resources better to provide programs to Reservation communities.”

Q: WHAT IS ONE OF THE SDSU RESEARCH PROJECTS YOU ARE MOST PROUD OF?
A: “It’s hard to pick just one. At the Cottonwood Range and Livestock Field Station, SDSU has 60 consecutive years of grazing data from the same pastures. We are still gleaning lots of valuable information from that for producers. We are also leading the industry with some of our fetal programming work with cattle. And that data has real implications for human nutrition as well. Also on the horizon, SDSU is collaborating with several organizations including the U.S. Fish and Wildlife Service, Game, Fish & Parks, North Dakota State University, the Standing Rock Indian Reservation and other partners for a long-term study to determine a threshold for prairie dogs and cattle to co-exist on range. There are many other great projects in the works. We are always learning new things and looking at different aspects of production, habitat and economics and that’s the neat thing about SDSU Extension as we serve different stakeholders in the state.”

Q: WHAT’S YOUR OUTLOOK FOR SDSU’S FUTURE?
A: “I think we have the greatest talent pool we have ever had. From the folks who every day make sure the limited resources are being managed and cared for in the best possible manner, to the people who make sure that those care-givers and stewards are being taken care of, to the rest of the staff and faculty that serve the youth, producers, students, communities, agencies and other stakeholders. Everyone is committed to do the best job they can. I couldn’t be more proud to be associated with the organization, and I look forward to even more amazing changes in the future.”

Editor’s Note: A search committee has been formed to select the next West River Ag Center Director. Extension Range Specialist and Professor Roger Gates is serving as the Interim Director.
“Children of Alumni” Tuition Rate Approved

Children of South Dakota State University alumni living outside South Dakota may be eligible for in-state tuition starting with the fall 2015 semester. In April, the South Dakota Board of Regents approved the “Children of Alumni” program for all of the state’s six public universities.

Freshmen and transfer students who enroll in fall 2015 or after are eligible for the program. Freshmen must have an ACT composite score of 20 or higher (SAT of 930 or higher). Transfer students must have GPA of 2.5 or higher.

“South Dakota State University has more than 70,000 alums across the United States. This program will make it possible for children of alumni living out of state to benefit from an SDSU education as well,” says Doug Wermedal, State’s associate vice president for student affairs.

SDSU Earns New Doctoral-Level Designation

The American Association of University Professors has announced South Dakota State University is now categorized as a Category 1 or doctoral-level institutions. The change is a result of State meeting AAUP guidelines in terms of number of doctorate recipients and the range in doctoral-level program offerings.

To be considered, institutions must annually grant a minimum of 30 doctoral-level degrees in three or more unrelated disciplines.

South Dakota State has tripled the number of doctorate completions in less than 10 years, growing from 14 in 2006 to 47 in 2014. The number of pharmacy doctorates and doctor of nurse practitioner degrees do not count in those figures.

“The AAUP designation verifies the demonstrated emphasis in growing PhD programs, particularly the 10 that have been launched since 2003,” notes SDSU President David Chicoine. “It also confirms the demand for graduates in these disciplines and recognizes the importance of the related faculty research.”

Faculty News

Michele Dudash began her duties as head of SDSU’s Department of Natural Resource Management in July. Prior to joining SDSU she was a professor in the Biology Department at the University of Maryland.

South Dakota State University professor and SDSU Extension specialist Robert Thaler was honored as the 2015 Governor’s Ag Ambassador on July 10 at the Governor’s Agricultural Summit in Deadwood. Governor Dennis Daugaard recognized Thaler for influencing many young producers throughout his career in agricultural education and contributing to the livestock industry through his extensive board participation. Thaler, who received his bachelor’s and master’s degrees from State, has been working at the university since 1988.

Lora Duxbury Berg joined SDSU’s College of Agriculture & Biological Sciences (ABS) as Director of Marketing & Communications in January. She is coordinating ABS public and media relations efforts. Duxbury Berg is a 1988 alumnus of SDSU where she received her bachelor’s in Agricultural Journalism and in 1998 completed her masters in Journalism & Mass Communications. Formerly, she working with national agricultural publications. She grew up on a farm near Hurley, SD.

“Barry Berry” ice cream flavor debuts

SDSU dairy manufacturing students have unveiled a signature “Barry Berry” ice cream flavor to honor Dean of the College of Agriculture and Biological Sciences, Barry Dunn. The university has a long-standing tradition of student-conceived ice cream flavors, and has laid claim to being the originator of perennial favorite cookies and cream ice cream back in 1979.

To achieve a specific taste and texture for Barry Berry, a special blending process combines blueberry, strawberry and raspberry flavors in a batch freezer. The ice cream flavor is available on a limited basis at the SDSU Dairy Bar, located in Alfred Dairy Science Hall on the SDSU campus.
A GATHERING PLACE, an outdoor classroom, a place for solace and celebration, a living laboratory for research — these are all ways to describe the unique and beloved McCrory Gardens located adjacent to the SDSU campus in Brookings. And 2015 marks a special milestone as McCrory Gardens marks 50 years since it was established as a public garden in 1965.

The 25-acre gardens and 45-acre arboretum resulted from the vision of SDSU Professor S.A. McCrory, who wanted to create a place to showcase trees, shrubs, grasses, and flowers that were — or could be — a part of South Dakota’s landscape. Today, the outdoor campus offers an educational, outreach and research setting woven together for the benefit of SDSU and the public.

A 9,350 square-foot Education and Visitor Center was completed in November 2011 and has expanded the opportunity to host an array of events year-round at McCrory Gardens. The $4.2 million facility was built through the generous contributions of private donors and includes classrooms, a gift shop and an expansive area to host banquets.

“The Education and Visitor Center has been a great addition. It allows us to host meetings, banquets and receptions for the university, as well as for community and corporate events,” shares Heather Costello, who is operations...
manager for the McCrory Gardens Education and Visitor Center. Weddings are also a popular venue – 29 weddings and/or receptions were booked at McCrory Gardens during the 2015 summer season.

LOOK & LEARN
Programming offered throughout the year – and for all ages – is a key component of the McCrory Gardens mission. “Our goal is to try to encourage as many community members and students to visit the gardens to learn from and enjoy what we have here,” Costello says of the programs and events that are planned.

Examples of community events that have been hosted in the new center include an Easter Brunch, a Mother’s Day Brunch, and Frost Fest, which was held in February and featured a Norway theme and showing the Disney movie Frozen. "Frost Fest provided the opportunity to encourage families to come out and experience the beauty of the gardens in a different season, while also sharing some of the historic and cultural connections from the community,” says Costello.

During the school year, many SDSU students visit the gardens and arboretum as part of their coursework on campus, and local elementary students often take field trips to visit the gardens as well.

In summer, the McCrory Gardens staff has developed weekly educational programs specifically for kids – Books in Bloom for preschoolers and Team Green for first through third grade students. Each week the students explore different topics in the gardens from trees to bugs. Costello says through this programming the hope is to foster a love of nature and gardening among a new generation.

Throughout the year for adults, free educational programs featuring various topics and speakers are hosted on the “Third Thursday” of each month.

Looking forward, Costello says, “We are excited for the next 50 years.” McCrory Gardens staff will continue to plan activities and events to feature the beauty of the gardens and bring people together. Additionally, plans are underway to establish a “Family Garden” where kids can touch and experience a variety of gardening activities and plants.

For more information visit: www.mccrorygardens.com. An admission fee is now required: $4 for adults, $2 for children, and ages 5 and under are free. SDSU students also receive free admission. On August 7, 2015 a Garden Party was held at McCrory Gardens to commemorate the 50th Anniversary. The event featured live music, SDSU ice cream, and the garden in its full bloom.
SHOWCASING SOUTH DAKOTA'S AG COMMODITIES at SDSU athletic events has proven to be a winning combination—bringing in large attendances to support both ag and athletics, as well as helping raise scholarship dollars for College of Agriculture and Biological Sciences students.

The annual "Beef Bowl," a barbecue held prior to Jackrabbit football kickoff at Coughlin-Alumni Stadium, started this tradition of pairing ag and athletics 49 years ago.

Today, the barbecue attracts nearly 2,000 people to campus—many of whom are College of Ag alumni—and provides the chance to reconnect and reminisce with faculty and friends. In addition to the barbecue and revelry, beef bundles are auctioned off, with net proceeds from barbecue ticket sales and the auction going toward student scholarships.

Another long-standing Beef Bowl tradition is having two market steers on display that are then auctioned at half time, with net proceeds from those animals going to the SDSU Athletic Department.

"Beef Bowl has been a great event that shows support for our state's beef industry, while also raising funds for our SDSU students. Our Animal Science faculty enjoys hosting Beef Bowl each fall," notes SDSU Animal Science Department Head Joe Cassady.

Cassady reports that the annual Beef Bowl generates as much as $15,000 dollars each year for scholarships, which are presented to SDSU students who have indicated an emphasis in beef industry careers.

This year's 49th Annual Beef Bowl will be held at SDSU on Saturday, Sept. 26 prior to the 5 p.m. game vs. Robert Morris (Pa.). New this year, an Animal Science Department scholarship banquet that was formerly held in the spring will be held on Friday evening Sept. 25. Cassady says this will allow scholarship recipients to actively use their scholarship during the same school year, and it will help facilitate parents and sponsors coming to Brookings for the banquet, barbecue and the football game.

Additionally, two new awards will be presented at this year's scholarship banquet; a Distinguished Alumni recipient and Friend of the Department recipient will both be honored.

DAIRY, LAMB & PORK, TOO
Given the success of Beef Bowl, additional events to showcase the region's dairy, lamb and pork industries have been implemented in recent years.

In 2014, the first Dairy Drive was held during a Jackrabbit football match-up featuring SDSU vs Cal Poly. For 2015, Dairy Drive will be held in conjunction with SDSU's first home football game of the season at 6 p.m. on Sept. 12 against Southern Utah.

SDSU Dairy Science Department Head Vikram Mistry notes that the Dairy Drive game helps highlight and bring awareness to the Dairy Science Department and the state's dairy industry, which provides an estimated annual economic impact of $1.28 billion. Sponsors for Dairy Drive events, which include pre-game tailgating activities, include dairy farmers of South Dakota and dairy processors from the region.

In January and February 2016 in conjunction with the Jackrabbit basketball season, both the Pork Classic and Lamb Bonanza are held, which have been annual events for the past several years. During the Pork Classic, typically held during
a men’s and women’s double header, a pork sandwich meal is offered and pork bundles that are donated by Hormel are sold. Net proceeds from the meal tickets and pork bundles go toward animal science student scholarships. Similar to the Beef Bowl, one or two live pigs are brought to half court of Frost Arena in a trailer and auctioned at half time with those proceeds benefiting SDSU Athletics.

At the Lamb Bonanza, free lamb sandwiches are served by the South Dakota Sheep Growers and sheepskin pelts dyed SDSU blue and gold are auctioned at half time. Net proceeds from the pelts also go to animal science student scholarships. Cassady reports that at the February 2015 Lamb Bonanza a record-price of $1,500 was set for one of the unique SDSU pelts.

Cassady reports that the Lamb Bonanza and Pork Classic generate another $10,000 to $15,000 in animal science scholarships. “It’s great to see these funds raised to support our animal science students, and we strive to make sure recipients have an interest in that particular species.”

In addition to the scholarship funds raised, Cassady notes that each of these ag and athletic events promotes additional benefits, “We see a number of industry stakeholders and local businesses who make a point of being at these special events to support agriculture and to support SDSU. And, it’s always fun to visit and reconnect while watching Jackrabbit sports.”

Editor’s Note: Dates for the 2016 Pork Classic and Lamb Bonanza had not been set at press time. For tickets to upcoming Jackrabbit sports visit www.gojacks.com or call 1-866-GO-JACKS.
David Fremark

Grew up near: St. Lawrence, SD, and is the third generation to own and operate the family farming operation today

Years attended SDSU: 1980-1984

Degree: Bachelor of Science in Ag Business

Highlights: As a standout quarterback at Miller High School, Fremark went on to be a three-year starter, four-year letterman, and a two-time Academic All-Conference linebacker for SDSU.

Of his experience at SDSU: “I don’t have a favorite individual memory, but I realize that all the relationships that begin at SDSU continue to develop throughout life.”

Family & Farming: Married high school sweetheart, Lori, after his second year at SDSU. They have two sons, Peter and Jake, and two daughters, Kelli and Maggie. Peter lives in Miller and helps on the farm on weekends; Jake will be a high school senior this fall at Miller. The girls and their husbands graduated from SDSU, and all are now involved in the family farming operation, which includes a large cow-calf herd, a feedlot permitted for 6,000 head of cattle, cropland for raising winter wheat, spring wheat, soybeans, corn and sorghum, and a trucking enterprise for hauling their crops and cattle.

On getting started: “1984 was a good time to get started. Agriculture had come through a stressful time of high interest rates and low prices. I viewed it as an opportunity because land and machinery values were depressed.”

Service to Community & State: Served 12 years on the Miller School Board, the last 3 as president, during which a new school was built; served 6 years on the South Dakota Corn Utilization Council, with the last 2 years as president; also active in the Community Church of St. Lawrence, with former role as choir director. Fremark was also a member of a community a cappella group for several years, and still sings at church events. He says, “You can’t quarterback much when you are 50, but you can still sing.”

Most recent activity: Fremark is South Dakota’s sole representative on the Sorghum Promotion, Research and Information Board, a position he was appointed to by U.S. Secretary of Agriculture Tom Vilsack. Fremark is a proponent of the crop’s potential and shares that it has a rapidly growing market in China as a livestock feed, as well as domestically because it is a non-GMO, gluten free grain.

Homage to SDSU: In 2011 as President of the South Dakota Corn Utilization Council, Fremark facilitated the presentation of a $2 million “Cultivating Leadership” endowment to Barry Dunn, the Dean of South Dakota State University’s College of Agriculture and Biological Sciences, as a means to “allow SDSU to lead agriculture into the 21st century.” Fremark is currently a member of the College of Agriculture and Biological Sciences Advisory Board. He says development of the Board has helped keep the connection and communication going both ways between SDSU and the ag community.

Proactive outlook: Of his various leadership roles, Fremark says, “I decided I wanted to make a difference, so I got involved.” He adds, “It’s so good to work together and see what we can do.” He often tries to move people and organizations forward with his positive outlook. He shares, “Often in South Dakota we have the mindset ‘we don’t need that,’ but I like to get people to think how much better things can be if we did ‘that.’” He gives the examples of gravel roads versus asphalt, or an old school versus a new school, and adds, “It seems like to take a step forward there’s always some opposition, but once you take that step, everyone loves the outcome.”

Value from SDSU: Fremark is adamant that a four-year degree is essential in today’s ever-evolving, global ag economy. In addition to the education, research and relationships that SDSU exposes students to, Fremark counts one additional benefit: “Part of what SDSU is good at is showing kids we can make things better. Learning that ability to look forward and be positive... being visionary is priceless.”
Reflections on “living well”

At 42, I have begun to accept that I am no longer “young.” One glance in the mirror and the gray hair I’m staring at leaves me in a position where I can’t even make an argument.

It is not just the gray hair, but all the other things that go with it. I’m not quite as strong, more prone to doze off watching TV – and the list goes on.

More than any of the things listed above, I see a difference in my mind and where my thoughts tend to go. I look at life, and the world around me, much differently than I did when I was young. I am more reflective, I appreciate different things and spend time contemplating what the world will look like after I am gone.

I read a quote the other day from Ralph Waldo Emerson, and I’ve decided it is one of my new favorites:

“The purpose of life is not the pursuit of happiness; it is to be noble, to be compassionate, to have it matter that you lived, and lived well.”

Donors to SDSU and other worthy charitable causes seem to embrace this concept in their everyday lives. Don’t get me wrong, I’m in favor of being happy and enjoying the time we have here and appreciating the interactions we have with each other. I just hope somewhere along the way I do some things that make a real difference.

I guess I am fortunate to have reached the gray-haired portion of life. As they say, “Don’t begrudge the fact that you are getting old; it is an experience that is denied to many.”

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