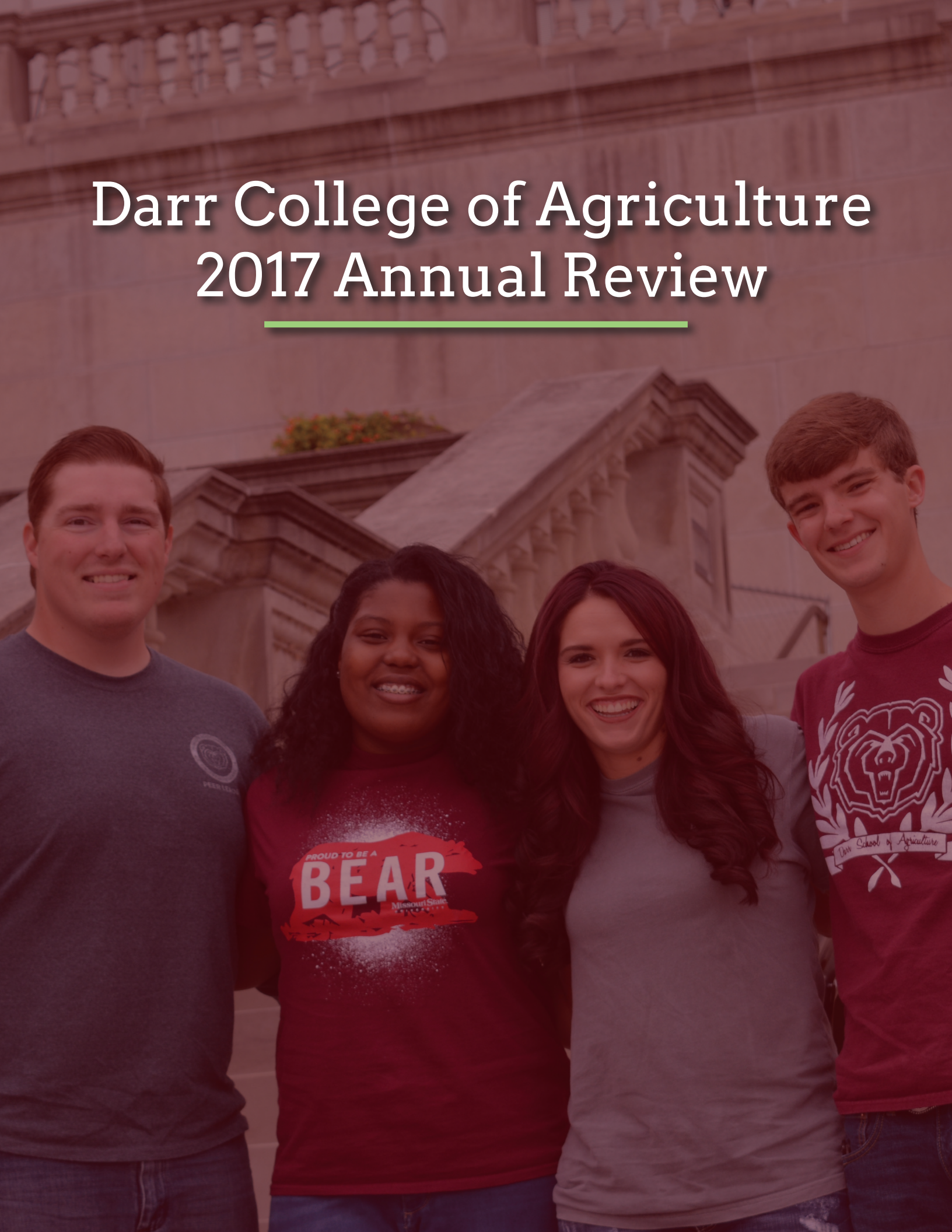
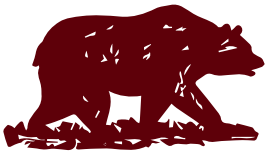
Darr College of Agriculture 2017 Annual Review





Darr College of Agriculture Mission Statement

"To prepare students with professional expertise leading to successful careers in business, government, and vocational institutions while experiencing fulfilled lives and meeting mature responsibilities in a constantly changing society; and to be a source of agricultural knowledge that is obtained through study and research that may be utilized for the improvement of the quality of citizens of the United States."

Introduction

The Darr College of Agriculture continues to experience tremendous growth in terms of enrollment, grants, and programs. In the past year, the College has undergone a number of important changes including the elevation from a School to a College, and the hiring of a new Director who now serves as Dean. Three departments were created: the Department of Agricultural Business, Communications, and Education, the Department of Animal Science, and the Department of Environmental Plant Science and Natural Resources. Each has been assigned an interim Department Head. Additionally, a five-year program review was completed. Due to significant changes in structure and leadership, a new strategic plan is currently being developed.

Enrollment and Student Success

The College of Agriculture continues to make progress in key areas of enrollment, credit hour generation, graduation and retention. Enrollment continues to increase with overall numbers in Fall 2016 topping 746 students, representing an increase of 60 students or a 9% increase compared to the year before and 2,087 additional credit hours generated. Table 1 and 2 shows enrollment numbers by major for undergraduate and graduate programs. Table 3 shows credit hour generation by course code. It is important to note the majors of Agronomy, General Agriculture Food, and Horticulture are either no longer offered or have been renamed to more accurately reflect the curriculum.

Table 1- Undergraduate Programs

Program Description	Fall 2014	Fall 2015	Fall 2016
Agr Bus/Agr Fin & Mgt-BS	45	41	43
Agr Bus/Agr Mkt &Sales-BS	54	61	68
Agr Bus/Enterprise Mgt-BS	30	33	29
Agriculture Education-BSED	54	50	64
Agronomy-BS	2	1	0
Animal Science-BS	173	181	207
Env Plant Sci/Crop Science- BS	33	37	40
Env Plant Sci/Horticulture-BS	43	42	39
General Agriculture-BAS	20	30	32
General Agriculture/Agr-BS	25	21	15
General Agriculture/Comm-BS	32	32	33
General Agriculture/Food-BS	0	0	0
Horticulture-BS	5	1	0
Natural Resources-BS	45	48	55
Wildlife Consrvt & Mgt-AG- BS	64	71	73
Total	653	691	746

Table 2- Master's Programs

Program Description	Fall 2014	Fall 2015	Fall 2016
Nat & Appl Sci-AG-Accelerated-MNAS	5	7	6
Natural & Appl Sci-AG-MNAS	12	8	16
Plant Science- AG Dept-MS	11	18	18
Plant Science-AG-Accelerated-MS	0	7	8
Secondary Edu/Agriculture-MSED	0	0	0
Technology Education-BSED	0	0	0
Total	28	40	48

Enrollment is expected to increase this year by roughly another 10%. At this time the College is on track to top Fall enrollment of 800 students. This increased enrollment presents both an opportunity and a challenge. Currently, freshman level classes are nearing capacity. One of the reasons cited by students as a draw to the program are small class sizes. As these students continue to filter into upper division courses it is probable that additional personnel will be required to fulfill student needs. Otherwise, many of the faculty will be dangerously close to overload status.

Administration and faculty continue to explore innovative ways to preserve small class sizes and meet the needs of students. Solutions include adding online sections, additional course offerings, interdisciplinary partnerships, and partnerships with other institutions. Further, additional faculty were hired in the last year to help as well.

Recent faculty hired include:
Dr. Ronald Del Vecchio, Dean of the College of Agriculture
Jeffery Gettys, Coordinator of Business Management
Alyssa Cassidy, Administrative Assistant II
Katelyn McCoy, Instructor Agricultural Communications
Dr. Nichole Busdieker-Jesse, Assistant Professor Agricultural Business
Nathan Fent, Instructor Agricultural Communications
Dr. Phillip Lancaster, Assistant Professor Animal Science
Dr. Sarah Lancaster, Assistant Professor Plant Science

Table 3- Credit Hours Generated

Course Group	Subject	2014	2015	2016
Graduate	AGB	27	12	42
	AGE	141	176	218
	AGF	0	0	0
	AGN	15	30	23
	AGP	191	189	219
	AGR	179	210	285
	AGS	74	38	69
	AGV	1	0	0
	Total	628	655	856
Lower Division	AGB	852	764	756
	AGN	1,241	1,616	1,636
	AGP	351	254	266
	AGR	1,453	1,650	1,690
	AGS	1,282	969	1,357
	Total	5,179	5,253	5,705
Upper Division	AGB	1,513	1,481	1,966
	AGE	305	332	417
	AGH	0	0	0
	AGN	640	540	816
	AGP	1,703	2,187	2,506
	AGR	1,698	2,285	2,457
	AGS	1,325	1,425	1,522
	AGT	0	0	0
	AGV	0	0	0
	Total	7,184	8,250	9,684
Total credit hours generated		12,991	14,158	16,245

Retention

Retention has also been high in recent years. The numbers have been steady or increasing over the last three years. Table 4 shows retention rates for the last four years. In the fall, the College will offer a GEP 101 section designed specifically for first generation agriculture students. This initiative will be designed to increase retention of this important group of students. Further, the College remains dedicated to getting students involved early on as a way to increase retention. A welcome event is held every fall to introduce incoming freshmen and transfer students to organizations, faculty and staff.

Table 4- Retention Rates

	% Retained			
Academic Period	Fall 2012	Fall 2013	Fall 2014	Fall 2015
Student Class				
Freshman	73%	78%	78%	79%
Sophomore	85%	81%	82%	89%
Junior	92%	81%	82%	88%
Senior	90%	89%	89%	91%
Master's	86%	76%	86%	75%
Total	86%	83%	84%	87%

Six year graduation rates are presented in Table 5 showing promising improvement over the last two years. Special attention has been given to seniors with only a few courses remaining in an effort to encourage them to complete their degrees.

Table 5- Six-Year Graduation Rates

	Fall 2009	Fall 2010	Fall 2011
First Time Transfer Cohort	65.31%	57.38%	68.75%
IPEDS First-time College	59.02%	68%	65.31%

Curricular Changes

On the College level, a new graduate program called Master of Science in Agriculture was added in the Fall of 2017. It has approximately 20 graduate students enrolled including students enrolled in accelerated masters. It includes emphasis areas in Agricultural Business, Agricultural Communications, Animal Science, and Natural Resources. Students may complete the degree using a thesis option, non-thesis option, or internship. Further, a number of curricular changes have occurred within each of the three departments.

Agricultural Business, Communications, and Education

Agribusiness, Education, Communication (ABEC) currently has two well-established programs: BS in Agricultural Business and BS in Agricultural Education. A new course in agricultural entrepreneurship was developed and offered at the undergraduate and graduate levels beginning Spring 2016. Similarly, Farm Business Management (AGB 584) was offered in dual sections: undergraduate and graduate. An existing course, American Agricultural Policy (AGB 444) was revised and expanded into a three-hour course. We anticipate starting a new undergraduate program in agricultural communication in the Fall of 2017. The Board of Governors approved the program in the last meeting. In 2016/17, the department developed and offered nine new courses in agricultural communications under the general agricultural major in anticipation of the approval of the new major in agricultural communication. The new courses went through the curricular process and faculty senate has approved them. Two new faculty were hired to support the new program.

Environmental Plant Science and Natural Resources

Similarly, the Department of Environmental Plant Science and Natural Resources experienced a number of program changes. In Spring 2016 a forestry minor was approved. This minor will provide students with a valuable specialization area while allowing the College to fully utilize the Woodlands property for High Impact Educational Experiences. Additionally, five courses were developed and offered as special topics courses in Fall 2016 and Spring 2017 including; Integrated Pest Management, Dendrology, Site Specific Techniques in Agriculture and Natural Resources, Wildlife Law Enforcement and High Tunnel Crop Production. Each course will be evaluated to determine future offerings. A number of courses were renumbers and/or retitled to better reflect course content. Finally, a number of proposals were submitted in Spring 2016 and are awaiting decisions from the university.

Animal Science

The Department of Animal Science developed a new Companion Animal Science minor program. This program is in high demand among students and will serve as a valuable resource. Two new courses were also developed; AGS 492 – Stocker/Feedlot Cattle Production and AGR 399 – Equine Stable Management.

Assessment

Agricultural Business, Communications, and Education

In Agricultural Business, assessments are conducted in three courses representing three aspects of the program: 1) Fundamental knowledge (AGB144); 2) Comprehensive knowledge (AGB 524); and the Capstone course (AGB394/494). In all three courses, a pre post methodology is adopted.

Agricultural Industry Study (AGB394/494) is a weeklong intensive capstone course, which involves interacting with agricultural businesses in Kansas City, Springfield, Jefferson City and St. Louis. The purpose is to allow agricultural business and communication students to explore, through conference room discussions with management, various aspects of each firm's operations including marketing, finance, operations, and personnel. In the pre visit surveys, students' knowledge of the three pillars of public affairs is measured. At the conclusion of the study, students are surveyed again to measure their understanding of the practices of the public affairs mission by the companies they visited. Table 6 shows student responses while Table 7 compares the pre and post means. Based on this assessment, students' improved their understanding of public affairs after participating in the capstone course.

Environmental Plant Science and Natural Resources

The Department's assessment process is still in development. In the past, Integrated Pest Management was selected as the Capstone course, but it was determined to use AGR 499, Internship, instead. One faculty member oversees data collection. However, because of concerns regarding consistency of the student experience, additional options are being explored including senior seminar, using multiple 500 level courses, or the development of a new course.

Animal Science

The Department of Animal Science developed a management plan which will be used in all production courses for assessment. The plans for department wide use were recently development and results will not be available for this report. The Capstone Course, AGS 432 Sheep and Goat management implemented the management plan in Spring 2016. The results from this assessment tool have been very useful and are included in Appendix B.

Table 7- Agribusiness Students Public Affairs Aspects Mean Comparisons

	Pre		Post		Mean Difference (+/-)
N=32	Mean	Std. Dev.	Mean	St. Dev.	
Missouri agribusiness companies engage in community services	3.66	.653	4.63	.660	0.969
Community engagement by agricultural business is necessary for profitability	4.19	.535	4.41	.756	0.219
Agricultural businesses in Missouri promote cultural diversity	3.91	.734	4.16	.767	0.250
Missouri agricultural business invest in training workforce on cultural sensitivities	3.69	.693	4.44	.759	0.750
Missouri agricultural business put societal interests over their interest while making business decisions	3.41	.756	4.16	.847	0.750
Missouri agricultural businesses are likely to hold themselves accountable in case of adverse business situations	3.84	.677	4.72	.523	0.875

Table 6- Agribusiness Students Percent Responses on Public Affairs

N=32	Pre	Post	
Responses	%	%	Public Affairs Aspect
Disagree	3	3	Missouri agribusiness companies engage in community services
Not sure	34	0	
Agree	56	28	
Strongly Agree	6	69	
Total	100	100	
Disagree	0	3	Community engagement by agricultural business is necessary for profitability
Not Sure	6	6	
Agree	69	38	
Strongly Agree	25	53	
Total	100	100	
Disagree	3	3	Missouri agricultural businesses invest in training workforce on cultural sensitivities
Not Sure	34	6	
Agree	53	34	
Strongly Agree	9	56	
Total	100	100	
Disagree	13	3	Missouri agricultural businesses put social interests over their interest while making business decisions
Not Sure	38	19	
Agree	47	38	
Strongly Agree	3	41	
Total	100	100	
Disagree	6	0	Missouri agricultural businesses are likely to hold themselves accountable in case of adverse business situations
Not Sure	13	3	
Agree	72	22	
Strongly Agree	9	75	
Total	100	100	

Publications, Research, and Awards

In 2015, faculty within the College of Agriculture published seven referred journal articles. In 2016, four referred journal articles were published. This is in addition to numerous presentations, interviews, popular press articles, and creative works. Faculty and staff are also heavily involved with service to the university and community. In fiscal year 2015 the College of Agriculture secured $301,832 in grant funding and in fiscal year 2016 until February another $5,033,267.

Grants

- National Science Foundation "VESTA National Center of Excellence," -**$3,999,630**- Michelle Norgren
- USDA-NIFA "Managing Nutrient Inputs to Enhance the Sustainability of Forage-based Beef Systems," -**$298,662**- Dr. Sarah Lancaster
- USDA-NIFA "Expanding Research on Berry and Juice Chromatographic Analysis to Expedite Grape Cultivar Improvement and Build Education Capacity," -**$297,584**- Dr. Hwang
- USDA-NIFA "Leveraging Limited Resources: An Income Enhancement Strategy in Rural Development for Missouri, Arkansas, and Georgia Meat Goat Farmers," -**$549,411**- Dr. Onyango & Dr. Beth Walker
- USDA-NIFA- NLGCA "Creating hands-on learning experience for students by investigating the effects of neem essential oil and neem constituents on insect immunity." -**$137,074**- Dr. Pszczolkowski
- Missouri Agricultural Foundation, "Constructing a Covered Feeding Facility to Evaluate Finishing Strategies and Genetic Selection Programs in Beef Cattle," -**$74,979**- Dr. Philip Lancaster
- USDA-NCPN "The Midwest Center of NCPN-Grapes," -**$57,580**- Dr. Wenping Qiu
- USDA-MO Dept of Agriculture "Continuous Evaluation of Seven Grape Varieties From the Cross of Norton and Cabernet Sauvignon for Selecting New Wine Grapes for the Missouri Grape and Wine Industry," -**$19,550**- Dr. Wenping Qiu
- USDA-MO Dept of Agriculture "Genetic Study of Rooting Ability in Vitis aestivalis-derived 'Norton' Grape," -**$49,988**- Dr. Chen-Feng Hwang
- USDA-MO Dept of Agriculture "High Tunnel Production/Rotation of Primocane Bearing Raspberries in Grow Bags," -**$13,500**- Ms. Marilyn Odneal
- MO Dept of Agriculture "Grape and Wine Institute," -**$8,500**- Dr. Wenping Qiu
- USDA-MO Dept of Agriculture "Investigating the Optimum Planting Date for Garlic in Southwest Missouri" -**$20,816**- Dr. Clydette Alsup-Egbers
- MO Dept of Conservation "Conservation Enhancements at the Journagan Ranch" -**$38,350**

In addition to grants and sponsored research, the College has been successful in securing private gifts as well including approximately $570,000 in fiscal year 2014, $168,000 in fiscal year 2015, and over $3.6 million in fiscal year 2016. In October 2016, the College hosted the third annual Alumni and Friends Celebration Event. Over the past three years, the event has raised over $71,000 to support the College and its students.

Awards - College, Faculty, and Student

- **MSU College of Agriculture Alumni and Friends Association** - Volunteer of the Year from the MSU Alumni Association
- **Dr. Melissa Remley** - Curtis P. Lawrence Excellence in Advising, will be recognized at the NACADA conference
- **Justin Sissel**, Farm Operations Manager - elected President of the Missouri Hereford Association
- **Dr. Mike Burton** - 2017 Honorary State FFA Degree
- **Dr. Mike Burton** - Provost Fellow for Public Affairs 2017-2018
- **Dr. Chin-Feng Hwang** - 2016 Outstanding Graduate Mentor Award from the Missouri State Graduate College
- **Katelyn McCoy** and **Nathan Fent** - completed Master Advisor training
- **Christi Sudbrock** - completed the Accessibility Institute
- **Jennifer Morganthaler** - Certified Distance Educator
- **MSU Show Cattle** - won Junior Yearling Scholarship Division at the National Western Stock Show
- **Mountain Grove Cellars** - 2016 Jefferson Cup Winner, multiple gold, silver and bronze medals at numerous competitions
- **Taylor Young**, Senior - 2017 Frank D. Keim Graduate Fellowship from the American Society of Agronomy, American Society of Agronomy, Crop Science Society of America, Soil Science of America Outstanding Senior Award
- **Macey Hurst**, Junior - crowned Missouri Beef Queen
- **Dani Plank**, Senior - elected National Midwest Vice President for Delta Tau Alpha
- **Dani Picard**, Junior - won IHSA semi-finals individual advanced horsemanship and competed at national competition
- **Rachel Veenstra**, Junior - Missouri Green Industry Alliance scholarship winner
- **Bridgette Williams**, Graduate student - 2017 Missouri State University Distinguished Thesis Award in Life Sciences

International Programs

Ningxia University Partnership

This year, the College hosted the second group of faculty and students from Ningxia University. There were 10 faculty and 50 students in various agriculture and wine fields. The group arrived in September and have been participating in language learning courses, specialized sections, and traditional sections in the College. The partnership will continue next year and a specialized certificate is currently being developed.

Haiti

Over the 2017 spring break, a group of 10 students went on a service learning trip to Haiti lead by Dr. Micheal Burton. The trip was hosted in partnership with Project HOPE and involved observing production systems, volunteering at the Haiti Home of Hope orphanage and training agricultural producers in areas, such as animal health, soil and water conservation and composting.

Brazil

This may marks the fourth annual agricultural exchange between UniCesumar in Margina, Brazil and Missouri State University. This year 15 students and 2 faculty traveled from Brazil to Springfield for a week, while 5 students and 2 faculty from MSU traveled to Brazil for a week. The exchange was well received and in the fall two students from past exchanges will attend classes at MSU in agronomy and English. An exchange of students for a longer period of time is being explored.

Additional study away opportunities in development include the Philippines, Chile, and Nepal. However, with this increase in opportunity it can be a challenge to reach the critical mass in all sections. The College is considering developing a rotation for study away courses.

Recruitment

The College continues to maintain a strong presence at Ozark Empire Fair, the Missouri State Fair, the Governor's Conference on Agriculture, the Missouri FFA State Convention, the National FFA Convention, as well as conducting school visits. Additionally, a graduate student in Agriculture Communications was assigned to manage all College social media activity with oversight from her supervisor. Thanks to these efforts our engagement across all social media platforms is at an all time high.

This year marked the first year for the Agriculture Living Learning Community. Located in Freddy Hall, the residence hall director noted it was one of the strongest LLC in terms of building community. Further, many of the students will be living together again next year. Faculty were activity involved throughout the semester. One of the favorite activities for both faculty and students was the Dinner with the Dean, held each semester. Plans are currently under way to increase participation in the LLC for next year.

Finally, this year's Salute to Agriculture event was one of the most successful to date. There were over 1,100 in attendance this year. Contact information was captured for a significant amount of the participants. The event is scheduled for September 2017 and our goal is to have 1,300 participants this year.

VESTA

The Viticulture and Enology Science and Technology Alliance (VESTA) is funded as a National Center of Excellence in the Advanced Technological Education program of the National Science Foundation to address the technical workforce needs of the U.S. grape and wine industry. VESTA offers a unique blend of online courses for knowledge acquisition, as well as hands-on knowledge application and skills development through field practicums at grape and wine production sites. In addition to Missouri State University, VESTA consists of 17 college and university partners in 14 states throughout the country. The program offers a total of 39 courses, with 8 in Viticulture, 13 in Enology and 12 in Wine Business Entrepreneurship leading to Technical Certificates and/or Associate of Applied Science Degrees. There are 6 additional elective courses that can be pursued in multiple degree tracks. Through Missouri State University, students also are able to pursue a Master's of Plant Science degree with emphasis in either Viticulture or Enology. Since inception in 2003, VESTA has attracted students from 47 states and 7 other countries, reaching a total of 1,740 students through this academic year. In Missouri and other states, VESTA students are establishing themselves as productive employees, as well as participating in the creating new wineries and vineyards.

The national network of commercial vineyards and wineries available to students for their field practicums continues to expand reaching in excess of 525 located in 41 states and 9 other countries.
In 2016 a survey was conducted to assess whether these field experiences met the expectations of the stakeholders – instructors, students and their field site mentors. Of the survey recipients that opened the survey, 36% provided feedback to VESTA. Responding students (68) agreed that their field experiences were valuable (89%) and encouraged them to continue their VESTA education (86%). Responding mentors (49) agreed that the student-mentor relationship was of value to them and their company (70%), and that they were likely to continue to participate in the VESTA practicum program (82%). Opportunities to improve these hands-on experiences also were identified by the respondents. Results of the survey were the focus of the Curriculum Review at the VESTA 2016 Summit. Recommendations from industry representatives and instructors led to improvements in (a) the field site application process, (b) communication procedures among the Program Office, instructors, students and industry mentors, and (c) closer alignment of student and mentor expectations to course objectives. This survey will be repeated in two years to assess the effectiveness of these changes.

In addition to field experiences, special topic workshops are conducted to enable students to gain skills in sensory evaluation, and wine and must analysis. In the past year, 17 workshops have been held across the country, 2 of which were conducted in conjunction with industry associations' conferences. More than 200 students, industry representatives and the general public participated in these workshops. Participant evaluations revealed that the content and instructors consistently received excellent reviews.

Recognizing the need for students to be cognizant of the latest advances in the grape and wine industry, technological advances and science-based practices are being embedded into VESTA courses. A special focus for this year is the development of computer-based and virtual reality technologies that simulate the operations of vineyards and wineries. This will enable the students to conduct real-world problem solving in their courses, as well as develop skills that will enrich their field practicum experiences.

Facilities

Bakers Acres has been primarily used for the production of hay to supplement production at the Journagan Ranch, the Darr Ag Center and Shealey Farm. New gates were added to the property this year.

Karls Hall continues to be the main academic building for the Darr College of Agriculture. A number of activities are held every year in Karls Hall including the District FFA Contest and New Student Welcome. These events are responsible for bringing in thousands of potential students not only for the College of Agriculture but for all academic units across campus.

Pinegar Arena Numerous events are held at the Arena throughout the year including multiple ASHA horse shows, FFA workshops, and the Farm Safety Workshop. This year, fans were added to the main arena and the audio/visual equipment was upgraded in the classroom attached.

Darr Agricultural Center remains a highly visible piece of the College as well. Classes held at the Bond Learning Center continue to expand as upper division animal science and plant science courses move to the center. Thanks to a student initiative, the Darr Agriculture Center will receive new signage to more clearly communicate to the public that the Center is part of the University. The Bond Center is also being utilized as meeting space for College of Agriculture events such as the Ag Expo (with an attendance of almost 250 high school students), the PBR Salute to Agriculture Event (with almost 1,100 students and area Farm Bureau Leaders in attendance) and the annual Agriculture Forum and Scholarship Banquet. Furthermore, the building is also used by on-campus groups and community organizations for conferences, meetings and retreats. The ballroom in the Bond Learning Center is being renovated with a new sound system. This should eliminate ongoing problems. Classroom technology is also being upgraded throughout the building.

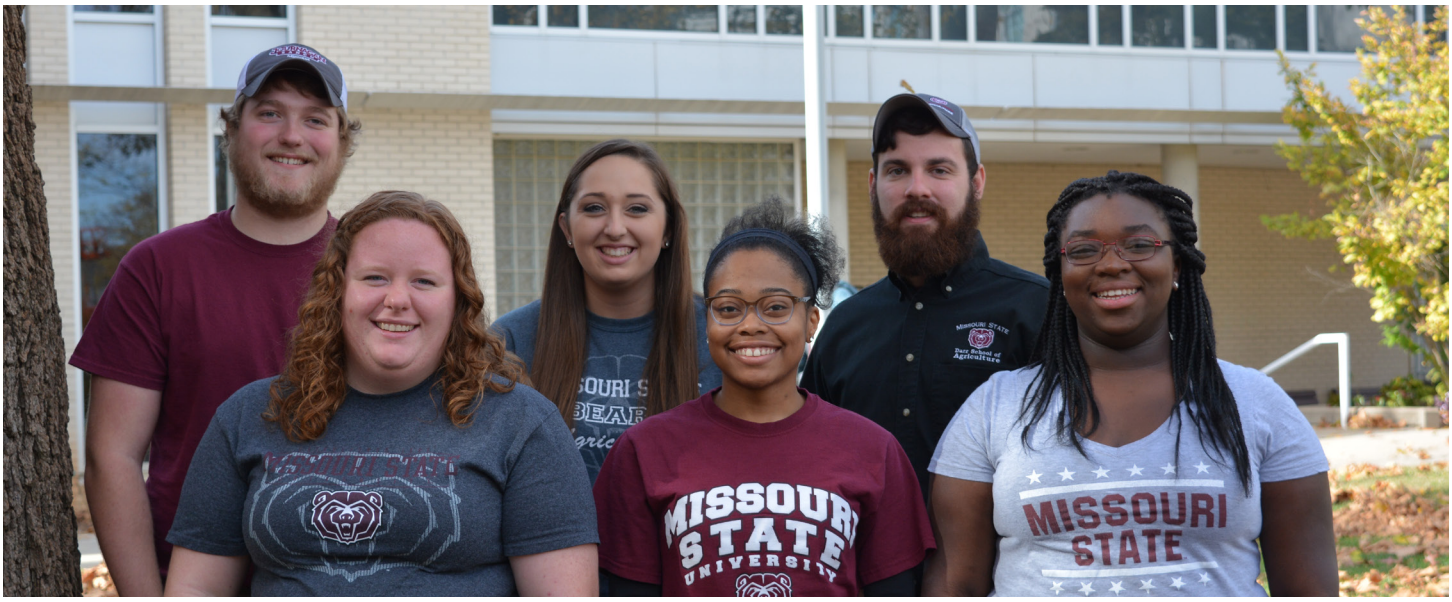
Journagan Ranch continues to provide unique learning opportunities for undergraduate and graduate students. Upperclass animal science students spend the weekends during calving season assisting and learning about the process, and numerous tours have used the facilities to learn more about agriculture and cattle production. The cattle produced on the ranch also serve as an income generating activity through the sale of the animals as seed stock. Furthermore, some of the animals are being raised to slaughter weight for sale in the local Springfield market. This year, the Ranch got new cattle handling equipment for the red barn facility.

The Kindrick Farm was donated to the College in Spring 2017. The property is currently being developed to allow research, and student and community experiences. Electrical fence was repaired and added to the property, and a new security light was added to the main barn.

The Woodlands serves as a research hub for forestry and wildlife conservation-centered projects. Paths have been created and maintained to allow students, faculty, and visitors to have access to the property. In addition, a gravel parking area was established and new gates were installed. Signage is now located at the property indicating its connection to Missouri State.

Shealy Farm Cattle from the Journagan Ranch are being taken to the Shealy Farm to be raised to slaughter weight primarily on grass while supplemental feed is given to the animals to improve flavor toward the end of their life cycle. The animals are then processed at Hörrmann's meat processing facility in Fair Grove and then made available for sale in Hörrmann's storefront property on Battlefield and at HyVee also located on Battlefield. A number of research projects have begun at the farm which have allowed for the purchase of equipment, fencing, and maintenance. A significant portion of these costs were covered by grant funding.

The Fruit Experiment Station located in Mountain Grove continues to offer cutting edge experiences for students in grape genomics. In addition to research and student work, the station offered a variety of workshops and programs including the wine premiere, pruning, apple grafting, and shrub propagation workshops to teach fruit growers and enable their home and business success. The Station produced award-winning wines to represent Missouri State with a tangible product, to teach and model grape and wine production and as income generation. The parking lot in front of Faurot Hall was repaved. the Farm Safety Workshop. The primary renovation at the Station this year was replacing the parking lot for the main buildings on the property.



Appendix A

Management Plan for AGS 452
The objective of the plan is to allow students to apply the information from this, and the other courses in your program of study, to develop a profitable animal production plan. The items you need to include in your plan are as follows:

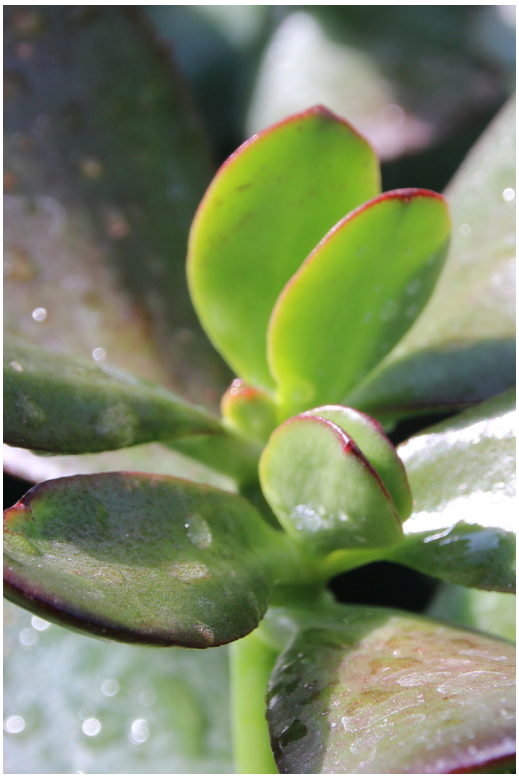
Property: Identify a piece of property that you think would meet the needs of your production unit.
Include:
- Cost of land (regardless of current ownership or expected inheritance)
- Property Taxes
- Interest rates

Infrastructure: Identify what is on the property and what other elements you will need to purchase.
Include: Facilities-Housing for animals and people if necessary
- Equipment-those listed below and any other equipment specific to your production unit
  - fences (interior and exterior)
  - waterers
  - feeders
  - implements (cost, depreciation, cost of use)

Animals: Minimum of 10 for non-ruminant plans, 25 for ruminant plans
Include: Selection- breed as well as specific selection criteria to meet your production objectives, costs of animals, % of replacements you will keep or purchase each year, how many you will sell/cull each year, culling criteria,
Reproductive management plan
Nutrition-include at least three stages of production (suck as kidding, dry ewes, yearlings, etc)
Forage management plan (soil and plant test, rotational grazing, multispecies grazing, etc)
Nutrient management plan (composting, runoff, keeping animals off of streams, fertilizing)
Herd health
- Parasite
- Vaccination
- Quarantine
- Transportation

Business Elements
Include: Marketing Plan-when, where, how
- Annual Profit and Loss Statements
- 7 year Income Statement

Spring 2016 was the first semester we (Animal Science Faculty) used the project covered above. Early in the summer of 2016, faculty and staff met and read selected management plans. As such, I decided to require the various sections of the management plan to be turned in every few weeks during the entire semester so that I could offer them feedback prior to them turning in their completed project. I implemented "rough draft" dates during the summer of 2016 (online course) and think it helped the students. In addition, I created a discussion board thread and when I noticed students all making the same mistakes; I provided additional assistance per the thread. The students seemed to appreciate this feedback and we had multiple online dialogs.
In addition, after the first semester, I realized the students did not have the economic background to complete the project. Students did not know how depreciation worked, how to obtain a loan, loans available, repayment lengths of loans, what capital is, etc. Therefore, I asked our Farm Business Management Professor to do a lecture for my students.
In the spring 2017, my students pointed out that much of the information I cover in the class that is essential to the completion of the project, is covered in the last half of the semester, when they are well into working on their project. Therefore, this summer, I am going to change the lecture order of the class. Rather than start with breeds, getting started in sheep and goats, etc…topics which are more introductory, I am going to try to bring in information about breeds, etc., while covering more advanced topics such as health, genetics, and reproduction. I have never taught this class in "reverse" order and have never been a teaching assistant where professors taught in reverse order, but I am willing to try and see if the students see the new order as helpful.
In addition, I noticed some of my lectures repeated information from previous lectures. I am going to "clean" some of my lectures and delete duplicity and try to provide information in more succinct way.



Missouri State

WILLIAM H. DARR
COLLEGE *of*
AGRICULTURE