Center of Excellence for Experimental Learning in Agricultural Science

FY 2021 Annual Report

Department of Agriculture, Geosciences, and Natural Resources
Table of Contents

Mission Statement.................................................................................................................. 3
Executive Summary ............................................................................................................... 4
Faculty/Staff ......................................................................................................................... 14
Student Information ......................................................................................................... 15

Planned Program Activity FY2021 and Response
  Objective 1 ....................................................................................................................... 16
  Objective 2 ....................................................................................................................... 16
  Objective 3 ....................................................................................................................... 16
  Objective 4 ....................................................................................................................... 17
  Objective 5 ....................................................................................................................... 18
  Objective 6 ....................................................................................................................... 19
  Objective 7 ....................................................................................................................... 21
  Objective 8 ....................................................................................................................... 22
  Objective 9 ....................................................................................................................... 23
  Objective 10 ..................................................................................................................... 24

Planned Program Activity FY2022......................................................................................... 25
Budget .................................................................................................................................. 27
Staffing of the Center of Excellence .................................................................................... 28
Organizational Chart .......................................................................................................... 29
Contact Information ........................................................................................................... 30
Appendix A ......................................................................................................................... 31
Center of Excellence for Experimental Learning in Agricultural Science
Mission Statement

The mission of the Center of Excellence (COE) for Experimental Learning in Agricultural Science is to provide an innovative infrastructure through which existing and new experiential inter-disciplinary studies in production agriculture, the environment, and conservation techniques can take place. The COE in Agricultural Science is designed to create a model for quality teaching across various disciplines, while facilitating and increasing external grant and contract activities, increasing public/private partnerships, and increasing outreach efforts. Other goals of the COE in Agricultural Science involve collaboration with secondary institutions, expanding livestock, crops, equipment, natural resource areas and other facilities to enhance experiential learning and yielding a major impact on the economy of the State of Tennessee.
Executive Summary

In accordance with the Center of Excellence (COE) for Experimental Learning in Agricultural Science mission statement, since January 2002, attention has been devoted to establishing a model field laboratory with facilities and resources to support experiential activities and research for students. This model field laboratory is used to promote and meet all goals of the COE mission statement. A major component of the COE is operation of a teaching and demonstration farm to complement ongoing academic programs in the Department of Agriculture, Geosciences, and Natural Resources (AGN) at the University of Tennessee at Martin (UTM). This endeavor was expanded effective January 1, 2006 when the Department of Agriculture, Geosciences, and Natural Resources assumed operational control of the entire 640 acres and associated buildings formerly operated by the Martin Experiment Station (University of Tennessee Institute of Agriculture). A major objective of this effort is to provide resources dedicated to the establishment of a quality experiential learning and applied research environment for the UTM campus and the citizens of Tennessee. This in turn meets the goals and objectives of the COE for Experimental Learning in Agricultural Science mission statement.

Presently, there are approximately 200 acres of COE property in field crop production with another 250 acres devoted to forage production and pasture for teaching herds/flocks of beef cattle, swine, horses, meat goats, and sheep. In addition, there are six outdoor research ponds (0.1 acre each) and ten indoor research tanks used for fisheries management. The COE also includes an alternative fuels (biofuels) laboratory, a wildlife biology field laboratory, a Tyson poultry facility, a companion animal laboratory, and two Veterinary Health Technology teaching laboratories. As a major thrust of the COE, the UTM Teaching and Demonstration Farm provides resources and facilities for public service activities and research to support public and private stakeholders involved in agricultural and natural resource sciences. Animals and facilities associated with the COE provide resources for training competitive teams for local, regional, and national competitions, as well as involvement in assisting collegiate and high school FFA and 4-H teams preparing for and competing in their respective interscholastic events across the state. This subsequently increases collaboration with secondary institutions and outreach efforts in accordance with the mission statement.

The University of Tennessee at Martin is an ideal location for the COE due to the existence of agricultural entities already in operation. The West Tennessee Agricultural Pavilion (Ned R. McWherter Agricultural Complex) serves as a hub of activity for clients in a variety of ways, ranging from livestock shows to the annual Santa’s Village. The Santa’s Village event has been in operation for the last 35 years and is a cooperation between the city of Martin and university faculty, staff, and students. The event provides great community outreach and community service through the collection of more than 18,000 canned goods and toy donations for the under-provided in our county. (Figure 1) The COE enables current and future faculty to not only serve the academic needs of current campus-based and online students, but also to expand opportunities for a statewide mixture of students in secondary schools as well as adult stakeholders through continuing-education offerings and events. The COE features applied research and external grant supported projects that complement the undergraduate and graduate teaching missions of the University of Tennessee at Martin.
During Fall 2020 and Spring 2021, the COVID-19 pandemic prompted the UT System to move most instruction at all campuses to the online environment. Due to CDC guideline, including social distancing parameters, activities such as student travel, travel studies, student club activities, guest speakers, and student club activities were cancelled through June 1, 2021. Additionally, all activities at the Ned McWherter Agricultural Pavilion, including 4-H and FFA events, were cancelled through June 1, 2021. Activities at the Ray and Wilma Smith Livestock Merchandising Facility were cancelled through August 1, 2021, as well.

Activities such as student internships, faculty research, and the Tennessee Governor’s School for the Agricultural Sciences were all significantly impacted by the COVID-19 pandemic. Both in-state and out of state travel was strictly limited for much of Fall 2020, Summer 2020, and Spring 2021 by the UT System. Student internships, in many instances, were delayed or cancelled. Faculty research was difficult to plan and execute due to travel restriction and social distancing requirements. The Tennessee Governor’s School for the Agricultural Sciences was offered virtually for the first time ever due to the COVID-19 pandemic during summer 2020. The Tennessee Governor’s School for the Agricultural Sciences was offered in-person with 3 participants electing to attend virtually for summer 2021. In summary, many activities that impact and support the Center of Excellence here at UT Martin continued to be significantly altered during this fiscal year due to the COVID-19 pandemic and, furthermore, impacted overall COE productivity.

Figure 3. Santa’s Village Display at the Ned R. McWherter Agricultural Complex
In April 2021, The University of Tennessee, on behalf of its Martin campus, had a grand opening to celebrate the acquisition and future use of the Coon Creek Science Center.

The property was obtained from the Pink Palace of Museums for institutional use as a field laboratory for teaching, outreach, and research activities in Geosciences, Natural Resources Management, Astronomy, and Agriculture. The Coon Creek Science Center is one of a dozen most significant fossil sites in North America. The site has yielded over 600 different species of marine creatures, preserved as unaltered fossils. The Pink Palace museum’s Coon Creek Science Center collection – includes a skull and skeletal remains of a 25 ft. Mosasaur – dating from the late Cretaceous, 75 million years ago, (a.k.a. -- the end of the Age of Dinosaurs). The University will utilize the property to offer enhanced undergraduate and graduate courses; public summer programming; Eco- and Paleo-tourism; and research. STEM teacher training is also performed and will continued on the site.
Funding provided by the Tennessee Department of Agriculture and the Tennessee Agriculture Enhancement Program funded the establishment and operation of a West Tennessee Animal Disease Diagnostic Laboratory (Figure 4) that opened on July 1, 2008. This laboratory serves as a satellite of the C.E. Kord Laboratory at the Ellington Agriculture Center in Nashville, Tennessee. Necropsies performed on animals used for food or fiber are performed at no charge to producers and public partners and all other lab services are performed on a fee schedule. The lab increases public and corporate partnerships with outreach efforts, in addition to being a valuable teaching tool. The lab is also used for instruction and demonstration for students and visiting groups that come to campus.

Figure 4. West Tennessee Animal Disease Diagnostic Laboratory.

The Veterinary Health Technology Option in Animal Science provides students an opportunity to earn a 4-year degree with a major in Agriculture, while meeting all of the qualifications established by the American Veterinary Medical Association to sit for the National Licensing Exam for Veterinary Technicians. The Veterinary Health Technology Option received initial accreditation in May 2014 from the American Veterinary Medical Association and the Committee on Veterinary Technician Education and Activities (CVTEA). We had our CVTEA site accreditation visit in February 2019 and received full accreditation through 2024.
During spring 2015, a free stall barn adjacent to the Veterinary Technology Lab was partially renovated using Title III grant funds, as well as funds secured from a USDA RBEG grant. The Title III grant is providing over $300,000 over five years and includes a four-phase renovation (Figure 3) to the free stall barn. The barn was eventually renamed the Veterinary Health Technology Facility. Phase I work totaled approximately $140,000 and the partial renovation created a new state of the art smart classroom equipped with Clear Touch Panel computing technology. Phase II and III renovations began in 2016 and were completed in the summer of 2018 to provide four office spaces (Figure 6) and a state-of-the-art laboratory for Veterinary Technology students.

Most recently, Title III grant funds were used for phase IV renovations on the rear section of the Veterinary Health Technology Facility to create a new teaching laboratory (Figure 7) for laboratory animals and a new student commons area for the growing Veterinary Health Technology Program. This project was started during the 2017-2018 academic year and was completed during the 2018-2019 academic year. During the 2019-2020 academic year, this facility growth of the Veterinary Health Technology option increased available instruction and research capacity for all Animal Science faculty.
Another important experiential learning project that has been funded through the UTM Provost’s Office, is the design and construction of a new Beef Evaluation Center. This center will provide experiential learning opportunities for animal science students utilizing and growing the current cow-calf herd. The Beef Evaluation Center will include a 1,245 ft² laboratory and a 250 ft² student commons area, (Figure 8) and a large, covered livestock working facility. This laboratory will also increase available interdisciplinary research capacity for all Animal Science faculty. This project was expected to begin in Fall 2018; however, it was delayed due to increased steel prices that carried the project total over budget. Fundraising is underway by Chancellor Craver and construction is TBD. Fencing was added Spring 2020 for farm production, research, and pasture in preparation for construction (9a and 9b).
In 2012, alumni faculty member Dr. Bob Hathcock, with the support of current faculty member Dr. Joseph Mehlhorn and the Northwest Tennessee Beekeepers Association, installed a small 11-hive apiary on the north end of the UTM Teaching and Demonstration Farm. The purpose of this apiary was to provide a vehicle for instruction/outreach regarding best management practices in beekeeping for West Tennessee beekeepers. In 2016, Dr. Hathcock and the Association turned the apiary over to the Department of AGN for future use and upkeep. In 2017, the apiary was upgraded to 25 hives and the Department of AGN began to involve Teaching and Demonstration Farm student workers to complete apiary maintenance (see Figure 10). This provides a unique hands-on learning experience for these students. The apiary also allowed for cross-collaboration between the Department of AGN and other departments on campus such as faculty and students from the Department of Chemistry. Beginning September 2017, honey and lip balm from the apiary is being sold in the UTM Bookstore, at UTM football games, and at other public events on the UTM campus. This project continues to be successful and continues to grow.

Figure 10. Student workers completing apiary maintenance.
The Center of Excellence has hosted the Tennessee Governor’s School for the Agricultural Sciences (TGSAS) since 2004. TGSAS provides exceptional agricultural experiential learning opportunity for Tennessee high school sophomores and juniors. (Figure 11. a & b) The academic program is a 4-week residential program that covers a variety of agriculture and natural resource topics. Students complete college courses as well as learn research techniques through group study research projects. A copy of the 2021 TGSAS Annual Report can be found on the Center of Excellence website. http://www.utm.edu/departments/agnr/coe.php

With the tremendous success of the Tennessee Governor’s School for the Agricultural Sciences from a student recruitment standpoint, there was an excellent opportunity to develop an “honors” program specifically for AGN students. With this vision and the help of a dedicated group of AGN faculty, the Agriculture, Geosciences, and Natural Resources Fellows Research Program (AGN-FRP) was born. The program includes an additional 12 hours of course work tailored AGN-FRP to enhance students’ investigative skills and promote undergraduate research. The AGN-FRP provides an opportunity for outstanding AGN students to gain organized experiences in research and scholarship through a mentored relationship with an AGN faculty member. The primary goal of the AGN-FRP is to foster and enhance undergraduate research in a manner that is mutually beneficial for the student and the faculty mentor. The additional training from the FRP program has positioned the students to be successful in advanced academic fields.

Figure 11. a. 2021 TGSAS Counselors and b. Class of 2021 with staff and counselors
UT Martin continues partnership with Tyson Foods Inc.

The University of Tennessee at Martin has continued to partner with Tyson Foods Inc. to add chicken to the list of animals UT Martin students work with during agricultural production courses during FY2020-2021. Tyson provides the birds, which will be housed in a renovated barn facility on the UT Martin Teaching Farm. The facility officially opened March 1. This facility is used for teaching, research, and career training. (Figure 12)
UT Martin receives Wildwood Farm gift

The University of Tennessee at Martin received the largest single gift in its history when Melanie Smith Taylor and her family announced that Wildwood Farm in Germantown, TN, will be transferred to the university upon her death. The gift will allow UT Martin to increase educational program offerings in veterinary technology and other agricultural disciplines soon. The gift will provide opportunities for UT Martin to collaborate with the University of Tennessee Institute of Agriculture.

The farm includes 350 acres of mixed pasture and mature oak woodlots surrounded by dense residential development. The Big Barn was completed in 1935 and became the hub of equestrian history in the Mid-South. Originally built as one of the top American Saddlebred show stables in the country, Wildwood transformed into the setting for many equestrian events.

The gift will make possible educational opportunities in veterinary technology, horsemanship, plant and soil science, environmental management, and natural resources management. Early programming will focus on adding a cohort for veterinary technology to complete the core of 200-400 level veterinary technology courses.

Figure 13a. Ms. Melanie Taylor Smith (third from left) at Wildwood Farm gift signing

Figure 13b. Aerial view of Wildwood Farm in the heart of Germantown, TN
# Faculty and Staff of Center of Excellence for Experimental Learning in Agricultural Science

## Center of Excellence Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Area of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ary, Clint</td>
<td>Associate Professor</td>
<td>Veterinary Science</td>
</tr>
<tr>
<td>Bird, Will</td>
<td>Associate Professor</td>
<td>Agricultural Education</td>
</tr>
<tr>
<td>Buttry, Emalee</td>
<td>Associate Professor</td>
<td>Animal Science</td>
</tr>
<tr>
<td>Chesnut, Matt</td>
<td>Lab Instructor</td>
<td>Veterinary Science</td>
</tr>
<tr>
<td>Cole, John</td>
<td>Assistant Professor</td>
<td>Agricultural Engineering</td>
</tr>
<tr>
<td>Darroch, Barbara</td>
<td>Associate Professor</td>
<td>Plant and Soil Science</td>
</tr>
<tr>
<td>Gale, Paula</td>
<td>Professor</td>
<td>Soil Science</td>
</tr>
<tr>
<td>Garner, Kelly</td>
<td>Lab Instructor</td>
<td>Veterinary Science</td>
</tr>
<tr>
<td>Lepcha, Isaac</td>
<td>Lecturer</td>
<td>Plant and Soil Science</td>
</tr>
<tr>
<td>Mehlhorn, Joey</td>
<td>Director/Professor</td>
<td>TGSAS</td>
</tr>
<tr>
<td>Mehlhorn, Sandy</td>
<td>Associate Professor</td>
<td>Agricultural Engineering</td>
</tr>
<tr>
<td>Morphis, Zach</td>
<td>Professor</td>
<td>Veterinary Science</td>
</tr>
<tr>
<td>Pelren, Eric</td>
<td>Professor</td>
<td>Wildlife Biology</td>
</tr>
<tr>
<td>Roberts, Jason</td>
<td>Professor</td>
<td>Veterinary Science</td>
</tr>
<tr>
<td>Simpson, Mark</td>
<td>Professor</td>
<td>Geosciences-GIS/Meteorology</td>
</tr>
<tr>
<td>Smartt, Philip</td>
<td>Professor</td>
<td>Natural Resources Management</td>
</tr>
<tr>
<td>Tewari, Rachna</td>
<td>Professor</td>
<td>Agricultural Economics</td>
</tr>
<tr>
<td>Totten, Wes*</td>
<td>*Director/Professor</td>
<td>Plant and Soil Science</td>
</tr>
<tr>
<td>Waldon, Amanda</td>
<td>Lab Instructor</td>
<td>Veterinary Science</td>
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<tr>
<td>Walker, Danny</td>
<td>Professor</td>
<td>Veterinary Science</td>
</tr>
<tr>
<td>Watson, Diana</td>
<td>Associate Professor</td>
<td>Animal Science</td>
</tr>
<tr>
<td>Wolters, Bethany</td>
<td>Assistant Professor</td>
<td>Plant &amp; Soil Science</td>
</tr>
</tbody>
</table>

## Center of Excellence Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Area of Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arant, Carrie</td>
<td>Business Manager</td>
<td>Budgets and Accounting/TGSAS</td>
</tr>
<tr>
<td>Bradford, Nathan</td>
<td>Teaching Farm Supervisor</td>
<td>Crop Management</td>
</tr>
<tr>
<td>Crockett, Jamie</td>
<td>Senior Farm Equipment Operator</td>
<td>Equipment Operation &amp; Management</td>
</tr>
<tr>
<td>Cunningham-Corvin,Megan</td>
<td>Equestrian Coach</td>
<td>Horsemanship</td>
</tr>
<tr>
<td>Jackson, Kim</td>
<td>Administrative Specialist</td>
<td>Student Support &amp; Contracts</td>
</tr>
<tr>
<td>Jones, BeLynda</td>
<td>Administrative Specialist</td>
<td>Veterinary Health Technology /TGSAS</td>
</tr>
<tr>
<td>Leiter, Kim</td>
<td>Assistant Equestrian Coach</td>
<td>Horsemanship</td>
</tr>
<tr>
<td>Pierce, Mike</td>
<td>Farm Manager</td>
<td>Crop and Animal Management</td>
</tr>
<tr>
<td>Woods, Tara</td>
<td>Research Associate</td>
<td>Animal Care and Support</td>
</tr>
</tbody>
</table>
Student Information

The Center of Excellence for Experimental Learning in Agricultural Science works closely with the Department of Agriculture, Geosciences, and Natural Resources to meet all student needs and the COE mission statement. The department has a current enrollment of approximately 1,270 students with areas of interest in Agricultural Business, Agricultural Science, Animal Science, Plant and Soil Science, Agricultural Engineering Technology, Geosciences, Wildlife Biology, Park Administration, Environmental Management, and Soil and Water Conservation. To see specific student awards and internships see Objective 8 on page 22.
Planned Program Activity in FY2021-2022

Activities of the Center for each general objective will include, but are not limited to:

Objective 1: Submit external grants seeking to support the Center of Excellence and its activities consistent with the mission and objectives of the Center of Excellence.

Target: Efforts will be directed at adding $100,000 in new grants and contracts during FY 2021-22 and maintaining or continuing existing grants and contracts.

Response: During the 17th year of operation, faculty members of the Center of Excellence were successful in acquiring a total of $914,030 in active grants (Appendix A). The continued success in acquiring external funding is due primarily to faculty appointments in the Department of Agriculture, Geosciences, and Natural Resources. The faculty identified potential funding sources and subsequently prepared grants and contracts from six different funding agencies in FY2021. Along with this funding the faculty continued research from grants and contracts established with five different funding agencies in prior fiscal years. A full report of all grants funded can be found on the Center of Excellence web site. http://www.utm.edu/departments/agnr/coe.php

Objective 2: Continue with the planning and design phase of a $2.5 million Beef Evaluation Center construction project.

Target: Renewed planning and fundraising for a new Beef Evaluation Center to support academics, cow-calf operation, and research and scholarly activity is underway for FY 2021-22. This facility will be comprised of a 40-seat state of the art classroom and studentcommons area. This laboratory will aid in student instruction but will also provide needed research space for undergraduate, graduate, and faculty research projects in all areas of animal science. The beginning of this project is now TBD.

Response: Activity with this objective has remained limited due to COVID-19 protocols. We are currently working with Mrs. Jenna Curtis-Swafford, Associate Vice Chancellor for Development and Planned Giving on this objective. A Beef Cattle Facility Board meeting will be held on Friday, November 12, 2021 on the UT Martin campus to continue fundraising discussion and activities.

Objective 3: Partner with agronomic companies desiring demonstration areas for seed and chemical applications on a cost-sharing basis.

Target: Continue field operations for the 200-acres of crops currently in production emphasizing variety trials and demonstration plots for alternative crops. Complete a systematic review of all agricultural production areas of the COE and amend where necessary to ensure optimum productivity (pH, fertilization, organic matter, etc.). Identify new partnerships for field trials and alternative crops to enhance area agricultural enterprises. Continue to offer
producer-oriented field day programs in cooperation with area equipment dealers, chemical companies, and/or seed companies.

Response:

- Agrigold
- Tyson Poultry Barn
- Bayer CropScience
- Syngenta
- Beck's Hybrids
- Nutrien Ag
- Helena Chemical
- Winfield Solutions
- Weakley County Farmers Co-Op

Objective 4: Generate timely, state-of-the-art information on key topics related to food, agriculture, and the environment with special attention to emerging issues that may have long-term implications for production of agricultural commodities while protecting natural resources in Tennessee.

Target: Seek to sponsor at least 30 speakers/programs that will be directed at enhancing knowledge of emerging issues in the agricultural sciences to include natural resources.

Response:

1. Erin Robbins and Jessica Brown - LVMT’s from Auburn Veterinary School - did lab demonstrations for Nursing 340 - March 2021
2. Dr. Cindy Schmidt, VET 320 class, North Madison Animal Hospital in person
3. Leslie Wereszack LVMT (virtual), senior clinical specialist/ICU supervising technician, Department of Small Animal Clinical Sciences at the UT College of Veterinary Medicine, Knoxville TN
4. Denver Melton, Live Production Grower Technician Manager, Tyson Inc., Union City, TN (came twice, once in both semesters)
5. Kimberly D. Wallace (virtual), Regulatory Board Administrative Director, State of Tennessee Department of Health-Related Boards, Nashville, TN
6. Dr. Eric Pelren, UT Martin
7. Dr. Stu Foster, Kentucky State Climate Office
8. Dr. Donna Mc Callister, Texas Tech University
9. Mr. Wil Tollefson, Tennessee state climate office
10. Mr. Carson Letot, Penn State University
11. Dr. Jennifer Williams, Teach Action Global
12. Samantha Goyret, Director, West Tennessee Local Food Network (virtual)
13. Jaclyn Fiola, Graduate Research Assistant, Virginia Tech (Virtual)
14. Ute Warkentin, Landscape designer, self-employed, from Vancouver, Canada (Virtual)
15. John Watkins, Grounds Director at Discovery Park of America (In-person)
16. Doug Tindall - University of Missouri College of Veterinary Medicine
17. Maryann Gomex Ross University College of Veterinary Medicine
18. Dr. Mark Gadlage, plant breeder at Corteva Agriscience; guest speaker via Zoom for PLSC 431.
19. Will Singer, graduate student in plant breeding at Virginia Tech University; guest speaker via Zoom for PLSC 431
Objective 5: Communicate the objectives of the COE and related action programs to raise public awareness of the importance of the agricultural sciences and natural resources to the economic wellbeing of Tennessee and the surrounding areas.

Target: Continue to utilize technology to enhance education for on-campus and off-campus students. Endeavor to offer at least one new program promoting agriculture and natural resources in Tennessee. Maintain and enhance course offerings for dual enrollment programs with high school students in Tennessee. Offer at least ten department courses for online delivery.

Response: The following courses were taught for high school dual enrollment credit in the 2020-21 academic year and below is the current flier that was distributed to the high schools.

- AGEC 110  Introduction to Agricultural Business
- AGEC 250  Introduction Agricultural Sales
- ANSC 110  Introduction Animal Science
- ANSC 210  Introduction Horse Science
- ANSC 230  Exotic & Companion Animal Management
- ANSC 260  Behavior Farm & Companion Animal
- ANSC 270  Animal Welfare and Ethics
- GEOL 110  Introduction Physical Geology
- GEOL 120  Environmental Geology
- PLSC 110  Introduction Plant & Soil Science

In addition to the dual credit courses, many courses were offered for online delivery as well. All Agriculture Business courses are now offered online, in addition to numerous courses in all programs in agriculture and natural resources within the AGN department. New courses are being developed and added online yearly by COE faculty.
Objective 6: Provide a forum for dialogue, debate, information sharing, and consensus building among policymakers, researchers, and leaders in non-governmental organizations, the private sector, and media through seminars, workshops, conferences, service learning, and publications.

Target: Plan and present at least 8 seminars/workshops on current topics of interest to animal and crop producers, as well as programs in natural resource management.

Response:
1. Rachna Tewari - CLASS (Climate Literacy for Agriculture and Sustainable Societies) Virtual conference, June 15-17, 2021, UT Martin.
5. Rachna Tewari - Attended webinar - "Diversity and Inclusion: Building Connection and Community in Physical, Online, and Hybrid Classrooms". Harvard business review. Fall 2020
10. Dr. Jason Roberts, Dr. Danny Walker, Dr. Clint Ary, Dr. Diana Watson, Amanda Waldon, Zach Morphis, Kelly Garner, Matt Chesnutt, BeLynda Jones - Music City Veterinary Conference, Murfreesboro, TN
11. Dr. Clint Ary - Tennessee Academy of Science, (TAS)
12. Dr. Clint Ary - North American Colleges and Teachers of Agriculture (NACTA)
15. Dr. Barb Darroch - Tennessee Academy of Science Virtual Annual Meeting. (attended online) Sydney Baker (student) also attended online. Nov. 2020
16. Dr. Barb Darroch - Cotton Tour, West Tennessee Research and Education Center, Jackson, TN. Attended online; students from PLSC 433 viewed the field day online. Sept. 2020
17. Dr. Barb Darroch - Soybean Disease Field Day, Milan Research and Education Center, Milan, TN. Attended online; students in PLSC 322 viewed the field day online. Sept. 2020
18. Dr. Barb Darroch - Virtual Milan No-Till Field Day, Milan Research and Education Center (attended online) July 2020
19. Dr. Barb Darroch - Soybean Scout School, West Tennessee Research and Education Center (attended online) July 2020
Publications


7. Selected paper presented at the 5th International Conference on Climate Change (ICCC) 2021, February 2021.


13. "Transitioning Governor's School to an Online Environment: Mistakes Made and Lessons Learned " Joey Mehlhorn, Philip Smartt, Diana Watson, Clint Ary, Will Bird, Jason Roberts, Sandy Mehlhorn (2021-0327) has been accepted for a poster presentation at the 2021 NACTA Virtual Conference.


**Poster Abstracts**

1. Equine skeleton reconstruction for use as a high-impact practice at the University of Tennessee – Martin (UTM). Savannah Metheny*, Diana Watson, Jason Roberts, Clint Ary, Jack Grubaugh, and Ray Witmer (TAS)

2. Student Perceptions of the Veterinary Profession Post High-Impact Practice Clint Ary, Emily Lewis, Jason Roberts, Will Bird, Joey Mehlhorn, University of Tennessee at Martin (NACTA)


**Objective 7:** Provide enhanced laboratory facilities and resources to support experiential learning.

**Target:** Expand experiential learning experience for students with at least one international travel course and offer at least 40 opportunities for internship participation. Identify opportunities for international study or internships.

**Response:**

1. Angelos, Madison- Jackson Animal Clinic, Jackson, TN
2. Cassetty, Rebecca- Auburn Veterinary School, Auburn, AL
3. Correia, Lillian- NVS, Nashville, TN
4. Cunigan, Divinity- MVS, Cordova, TN
5. Duncan, Savanna- Hooks Pet Clinic- Martin, TN
6. Hacker, Katelyn- Munford Animal Clinic, Munford, TN
7. Haynes, Kearsten- VCA Specialty, Chattanooga, TN
8. Holmes, Erin- Tennessee Equine- Eades, TN
9. Knox, Jamie- Bells Animal Clinic- Bells, TN
10. McCage, Ashton- VCA- Hawaii
11. McCoy, Alaynea- MVS- Cordova, TN
12. McKennedy, Katheryn- Prairie Haven Animal Hospital- Sherman, IL
13. Nash, Emily- Village Veterinary Specialty- Knoxville, TN
14. St. John, Michaela- Equine Veterinary Service- Paducah, KY
15. Tomczak, Kelsea- Mineral Wells Animal Clinic- Paris, TN
16. Weisenstein, Heather- Auburn Veterinary School- Auburn, AL
17. Wood, Holly- Cape Fear Animal Hospital- Fayetteville, NC
18. Cawthon, Marissa - Camden, TN
20. Long, Lexie - NVS - Nashville, TN
21. Miller, Clint - UTK Vet School - Knoxville, TN
22. Parish, Michaela - JAC - Jackson, TN
23. Parks, Marissa - VCA - Tomball, TX
24. Poole, Kaitlyn - Munford, TN
25. Ruff, Heather - Auburn Vet School - Auburn, AL
27. Anderson, Chloe - TN. Equine - Nashville, TN
28. Warner, Karley - Chattanooga Zoo
29. Forsythe, Zach - Gardiner Angus Ranch
30. Brewer, Will - Nutrien Ag Solutions
31. Burks, Hunter - Burks Farms
32. Floyd, Myah - West Tennessee AgResearch and Education Center, Jackson, TN
33. Fussell, Rhett - Bayer Crop Science
34. Hudgins, Emily - AmeriCorps (service at NRCS)
35. Leath, Kyle - RCG Trucking
36. Love, Hayden - West Tennessee AgResearch and Education Center, Jackson, TN
37. McIntyre, Currie - A&J McIntyre Farms
38. Pence, Jessica - UT Extension, Dresden, TN and UT Martin Teaching and Demonstration Farm
39. Sartain, Steven - Helena Agri Enterprises
40. Tribble, Jacob - North Delta Crop Consulting
41. Wilson, Ethan - West Tennessee AgResearch and Education Center, Jackson, TN
42. McGaugh, Jamie - Omni PGA Frisco Resort, Frisco, TX
43. Edwards, Bryce - Humboldt Country Club, Humboldt, TN

**Objective 8:** Support local, regional, and national competitions.

**Target:** Continue to host or participate in a minimum of 10 local, regional, and/or national competitions by UT Martin students and faculty.

**Response:**
  - Participated: Montana Wright (Student worker for the CLASS (Climate Literacy for Agriculture and Sustainable Societies Project, PI - Tewari) 2nd Place poster - 'Application of climate data' at the Student competition at the 130th Tennessee Academy of Science Annual Meetings.
  - State FFA Vet Science CDE. **Amanda Waldon** helped design this year's virtual test and assisted in hosting/recording (it was virtual with zoom calls). Judges from our department: **Kelly Garner, Zach Morphis, Dr. Danny Walker.**
  - State 4H clinics event. Did companion animal/vet science. People participating Dr. Ary, Dr. Walker, Tara Woods, Zach Morphis, Kelly Garner, Matt Chestnut, Amanda Waldon
  - Scarlett McClurkan participated in the SASES Research Poster competition at the 2020 Virtual International Annual Meetings of ASA, CSSA, and SSSA. Jessica Pence participated
in the SASES Internship Poster competition at the same meeting. Both students presented their posters online (November 2020).

- Sydney Baker participated in student research poster competition at the Tennessee Academy of Science Virtual Annual Meeting in November 2020. Sydney also presented online and came in third in her group.

**Objective 9:** Provide enhanced resources to assist in the operation of the Tennessee Governor’s School for the Agricultural Sciences.

**Target:** Continue to seek new experiential learning opportunities for the Tennessee Governor’s School for the Agricultural Sciences.

**Response:**
The Department of Agriculture, Geosciences, and Natural Resources hosted the 2021 Tennessee Governor’s School for the Agricultural Sciences (TGSAS) on campus from May 29 – June 25, 2021. The program consisted of 35 scholars from across the state of Tennessee. Scholars completed six hours of college coursework. Courses taught included AGEC 110: Introduction to Agricultural Business or NRM 100: Introduction to Natural Resource Management. Scholars also participated in research activities through Group Study Projects (GSP). The GSP’s covered precision agriculture and veterinary medicine. All GSP’s covered the scientific method and focused on experimental research activities.

COVID 19 Transition: We are grateful that the State Department of Education has allowed us to offer TGSAS in a person to person or virtual format to the scholars this year. We had 32 in person and 3 selected the virtual format.

The TGSAS leadership team starting meeting early in the spring 2021 semester to start planning which was met challenges because we didn’t know if we were going to be all virtual or face to face. We didn’t know if we were going to be allowed to travel, if facemask were going to be the way we saw our students each day or exactly how we would be able to house students. We were very successful have our classes, travel to some exceptional learning places and have a little fun along the way. Our TGSAS counselors did an outstanding job with our scholars again this year.

Several virtual educational study tours were incorporated throughout the 4-week program. These included field trips to the following:

1. Yeargin Farms Tour, Greenfield, TN
2. Agri Center International, Memphis, TN
3. UT Research and Experiment Station, Milan, TN
4. Massey Farm, Mt. Pleasant, TN
5. Tyson Foods, Union City, TN
6. Farm Bureau Headquarters, Columbia, TN
7. Reelfoot Lake, Lake County, TN
8. Tennessee Department of Agriculture, Nashville, TN
9. Pictsweet, Bells, TN
10. Wildwood Farm, Germantown, TN
**Objective 10:** Provide local and regional experiential learning opportunities at the Coon Creek Science Center.

**Target:** Seek to sponsor at least 30 speakers/programs that will be directed at enhancing knowledge of emerging issues in the agricultural sciences to include natural resources.

**Response:** Due to COVID-19 Pandemic policy, speakers and programming at Coon Creek Science Center was not feasible for FY 2020-2021. Policy did not allow for travel, nor did it allow for large gatherings which severely limited experiential learning at CCSS. Small groups if 4 or less, led by Dr. Michael Gibson as apart of UTM Geology classes, were the sole activity during this time at CCSS. The only exception to this was the small gathering in April 2021 for the CCSS grand opening conducted under COVID-19 pandemic policy.
Planned Program Activity in FY2021-2022

Activities of the Center of Excellence for each general objective will include, but are not limited to:

**Objective 1:** Submit external grants seeking to support the Center of Excellence and its activities consistent with the mission and objectives of the Center of Excellence.

**Target:** Efforts will be directed at adding $100,000 in new grants and contracts during FY 2022-23 and maintaining or continuing existing grants and contracts.

**Objective 2:** Continue with the planning and design phase of a $2.5 million Beef Evaluation Center construction project.

**Target:** Renewed planning and fundraising for a new Beef Evaluation Center to support academics, cow-calf operation, and research and scholarly activity is underway for FY 2022-23. This facility will be comprised of a 40-seat state of the art classroom and student commons area. This laboratory will aid in student instruction but will also provide needed research space for undergraduate, graduate, and faculty research projects in all areas of animal science. The beginning of this project is now TBD.

**Objective 3:** Partner with agronomic companies desiring demonstration areas for seed and chemical applications on a cost-sharing basis.

**Target:** Continue field operations for the 200-acres of crops currently in production emphasizing variety trials and demonstration plots for alternative crops. Complete a systematic review of all agricultural production areas of the COE and amend where necessary to ensure optimum productivity (pH, fertilization, organic matter, etc.). Identify new partnerships for field trials and alternative crops to enhance area agricultural enterprises. Continue to offer producer-oriented field day programs in cooperation with area equipment dealers, chemical companies, and/or seed companies.

**Objective 4:** Generate timely, state-of-the-art information on key topics related to food, agriculture, and the environment with special attention to emerging issues that may have long-term implications for production of agricultural commodities while protecting natural resources in Tennessee.

**Target:** Seek to sponsor at least 30 speakers/programs that will be directed at enhancing knowledge of emerging issues in the agricultural sciences to include natural resources.
Objective 5: Communicate the objectives of the COE and related action programs to raise public awareness of the importance of the agricultural sciences and natural resources to the economic wellbeing of Tennessee and the surrounding areas.

Target: Continue to utilize technology to enhance education for on-campus and off-campus students. Endeavor to offer at least one new program promoting agriculture and natural resources in Tennessee. Maintain and enhance course offerings for dual enrollment programs with high school students in Tennessee. Offer at least ten department courses for online delivery.

Objective 6: Provide a forum for dialogue, debate, information sharing, and consensus building among policymakers, researchers, and leaders in non-governmental organizations, the private sector, and media through seminars, workshops, conferences, service learning, and publications.

Target: Plan and present at least 8 seminars/workshops on current topics of interest to animal and crop producers, as well as programs in natural resource management.

Objective 7: Provide enhanced laboratory facilities and resources to support experiential learning.

Target: Expand experiential learning experience for students with at least one international travel course and offer at least 40 opportunities for internship participation. Identify opportunities for international study or internships.

Objective 8: Support local, regional, and national competitions.

Target: Continue to host or participate in a minimum of 10 local, regional, and/or national competitions by UT Martin students and faculty.

Objective 9: Provide enhanced resources to assist in the operation of the Tennessee Governor’s School for the Agricultural Sciences.

Target: Continue to seek new experiential learning opportunities for the Tennessee Governor’s School for the Agricultural Sciences.

Objective 10: Provide local and regional experiential learning opportunities at the Coon Creek Science Center.

Target: Seek to sponsor at least 30 speakers/programs that will be directed at enhancing knowledge of emerging issues in the agricultural sciences to include natural resources.
## Schedule 7

**CENTERS OF EXCELLENCE ACTUAL, PROPOSED, AND REQUESTED BUDGET**

### University of Tennessee at Martin

### Experimental Learning in Agricultural Science

<table>
<thead>
<tr>
<th>FY 2020-21 Actual</th>
<th>FY 2021-22 Proposed</th>
<th>FY 2022-23 Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Matching</td>
<td>Appropri.</td>
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<tr>
<td><strong>Salaries</strong></td>
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<tr>
<td>Faculty</td>
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<td>Other Professional</td>
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<td>Clerical/Supporting</td>
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<td><strong>Fringe Benefits</strong></td>
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<td><strong>Non-Personnel</strong></td>
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<tr>
<td>Travel</td>
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<td>Other Supplies</td>
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<td>Equipment</td>
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<td>Maintenance</td>
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<td>Consultants</td>
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<td><strong>Other (Specify):</strong></td>
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<td>Utilities and Fuel</td>
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<td>Rental and Insurance</td>
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<td><strong>Total Non-Personnel</strong></td>
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<td><strong>GRAND TOTAL</strong></td>
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### Revenue

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<th>FY 2020-21</th>
<th>FY 2021-22</th>
<th>FY 2022-23</th>
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<tr>
<td>New State Appropriation</td>
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<td>Carryover State Appropriation</td>
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<td>$0</td>
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<tr>
<td>New Matching Funds</td>
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<td>Carryover from Previous Matching Funds</td>
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<td><strong>Total Revenue</strong></td>
<td>$515,611</td>
<td>$523,362</td>
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Staffing of the Center of Excellence for Experimental Learning in Agricultural Science

The staffing strategy for the COE focuses on bringing a diversity of talent to the Center of Excellence to better meet the goals and objectives of the Center of Excellence. This is accomplished by offering staffing appointments ranging from 25 percent to 50 percent to faculty and staff of the Department of Agriculture, Geosciences, and Natural Resources. Staffing includes a Director (25 percent appointment) and Business Manager (25 percent appointment) and faculty who are selected through a proposal process (25 percent appointments and one cooperating faculty member with no formal assigned appointment) and the Director of the Tennessee Governor’s School for the Agricultural Sciences. Three support staff members are also assigned to the COE. Staffing assignments (with COE appointment percent) include:

**Administration:**
- Dr. Wes Totten: Director (25%)
- Mrs. Carrie Arant: Business Manager (25%)

**2019-20 RFP Faculty:**
- Dr. Clint Ary: Animal Diagnostic Lab (25%)
- Dr. Philip Smartt: Park and Recreation and Forestry (25%)

**Staff:**
- Mr. Michael Pierce: Teaching and Demonstration Farm/Ag Pavilion (100%)
- Mr. Nathan Bradford: Teaching and Demonstration Farm/Ag Pavilion (100%)
- Mr. Jamie Crockett: Teaching and Demonstration Farm/Ag Pavilion (100%)
- Mrs. Tara Woods: Research Associate/Diagnostic Laboratory (100%)

A complete Faculty/Staff listing is on page 10. An organizational staffing chart is included.
Center of Excellence for Experimental Learning in Agricultural Science

Organizational Staffing

Dr. Wes Totten
Director

Dr. Jason Roberts
Assistant Director

Dr. Clint Ary
Diagnostic Laboratory

Dr. Philip Smartt
Faculty & IT Support

Mr. Mike Pierce
Teaching and Demonstration Farm, Manager

Mrs. Carrie Arant
Business Manager

Mr. Nathan Bradford
Teaching Center Staff

Mr. Jamie Crockett
Teaching Center Staff

Mrs. Kim Jackson
Administration

Mrs. Tara Woods
Research Associate

Mr. Jamie Crockett
Teaching Center Staff

Mrs. Kim Jackson
Administration

Mrs. BeLynda Jones
Administration

Dr. Joey Mehlhorn
TGSAS, Director
Contact Information

Dr. Wes Totten
Department Chair – Director of COE
Professor, Plant and Soil Science
(731) 881-7262
257 Brehm Hall
ftotten@utm.edu

Dr. Jason Roberts
Asst. Director of COE
DVM, Professor, Animal Science
Director of Veterinary Technology
(731) 881-7952
216 Football Press Box
jrober29@utm.edu

Mrs. Carrie Arant
Business Manager
(731) 881-7221
253 Brehm Hall
carant@utm.edu

Mrs. BeLynda Jones
Administrative Specialist II
(731) 881-1011
208 Football Press Box
bjone124@utm.edu
Appendix A

Summary of Contract, Grant and Unrestricted Gift Activity

Ary, Clint. Funding for operation of West Tennessee Animal Disease Diagnostic Laboratory. State of Tennessee, Department of Agriculture $105,000 (Funded)

Cole, John. “Hydraulic Conductivity Trailer.” United States Department of Agriculture, Natural Resources Conservation Service $24,000 (Funded)

Cole, John. “Tennessee corn through the lens of virtual reality, building now for immediate future.” Tennessee Corn Promotion Board $23,842 (Funded)

Darroch, Barbara. “The Effect of Seed Applied Inoculants.” Tennessee Soybean Promotion Board $9,900 (Funded)

Darroch, Barbara. “Cultivar and Plant Growth on Insect Populations.” Tennessee Soybean Promotion Board $3,600 (Funded)

Darroch, Barbara. “Effect of poultry litter on soybean nodulation and yield.” Tennessee Soybean Promotion Board $15,700 (Funded)

Darroch, Barbara. “Capacity Building for Enhanced Research and Experiential Education: Resilient Cropping Systems for the Upper Mid-South.” United States Department of Agriculture, National Institute of Food and Agriculture $148,589 (Funded)

Darroch, Craig. “Use of soybean residue as an alternative litter material in broiler houses.” Tennessee Soybean Promotion Board $5,000 (Funded)


Gale, Paula. “Investigating Benchmark Soil Landscape in the South: Linking soils, landscapes, vegetation and hydrology.” United States Department of Agriculture, Natural Resources Conservation Service $100,000 (Funded)

Gale, Paula. “Nutrient Dynamics in Soils Along the Forked Deer River, North Jackson Restoration Site.” State of Tennessee, West Tennessee River Basin Authority $32,000 (Funded)

Gale, Paula. “Quantitative Tools for developing Ecological Sites in the Southeastern U.S.” United States Department of Agriculture, Natural Resources Conservation Service $37,736 (Funded)

Grubaugh, Jack and Barb Darroch. “TN FY20 PD Survey UT Martin.” United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine $22,000 (Funded)


Mehlhorn, Joseph. “Tennessee Governor’s School for Agricultural Sciences” State of Tennessee, Department of Education $156,000 (Funded)

Mehlhorn, Sandy. “Cover Crop and Increased Infiltration Rates’ Effect on Yields.” Tennessee Corn Promotion Board $11,541 (Funded)