

Institutional Effectiveness 2022-2023

Program: Agriculture BS

College and Department: College of Agriculture & Human Ecology – School of Agriculture

Contact: James Baier

Mission:

School of Agriculture’s Mission Statement: Our mission is to prepare students for leadership roles in the food, fiber, and natural resource professions by providing state of the art experiential learning through agriculture. The School of Agriculture (SOA) mission statement flows from the TTU Mission Statement "to provide leadership and outstanding programs in . . . agriculture and human ecology, nursing, music, art and interdisciplinary studies." The SOA mission statement additionally supports the TTU Flight Plan to improve the undergraduate experience.

The SOA offers a Bachelor of Science degree in Agriculture focusing on one of 10 concentrations. Those concentrations span across the broad discipline of Agriculture including: Agribusiness Management, Agricultural Communications, Agricultural Education, Agricultural Engineering Technology, Agronomy and Soils, Environmental Agri-science, Animal Science/Pre-Veterinary Science, Horticulture, Nursery & Landscape Management, and Turfgrass Management.

We prepare our students to, upon graduation, enter a multitude of fields in the agricultural industry or to continue their education through graduate school. Previous graduates can be found across Tennessee and the United States in such roles as park rangers, veterinarians, golf course superintendents, government officials, business owners, county agents, conservationists, university professors, military officers, high school teachers, consultants, agricultural product/equipment sales, bankers, farm managers, landscape developers, and the list continues to grow.

The School of Agriculture is blessed with two unique farms. In 1965 the Shipley Farm (300 acres) was acquired and houses the Hyder-Burks Pavilion, horticultural greenhouses, the organic farming operation, sheep, hogs, beef cattle, poultry, varied forage and row crops. Finally, in 2009, the Oakley Farm (1400+ acres) expanded the possibilities for research and teaching with access to 300 plus cows and calves with additional cropland and three quarters of an acre of greenhouses and other agricultural enterprises. All facilities are dedicated to the overall educational experience of our students.

Our vision states, "We are the hallmark program of experiential education in agriculture."

Attach Curriculum Map (Educational Programs Only): *See Appendix 1.

PG 1: ENROLLMENT, RETENTION, GRADUATION

Define Outcome: Exceed student enrollment numbers. The School of Agriculture (SOA) will use a combination of the following to meet this goal: 1) Strive to increase the number of freshmen enrolled each fall; 2) Strive to maintain at least a 90% retention rate Fall-to-Spring and 85% Fall-to-Fall; 3) Increase our presence on community college campuses across TN with the goal of admitting a minimum of 25-30 students per year; 4) Secure new funds for building a strong, focused recruitment program; and hire a full-time staff member (recruitment specialist) that will be charged with traveling the state and meeting with prospective students, their parents, alumni, etc.

Assessment Methods:

1. Enrollment, retention, and graduation rates.
2. Monitor recruitment work

Criteria for Success (Thresholds for Assessment Methods):

- Enrollment, retention, and graduation rates.
 - Strive to increase the number of freshmen enrolled each fall
 - Strive to maintain at least a 90% retention rate Fall-to-Spring and 85% Fall-to-Fall
 - Goal of admitting a minimum of 25-30 students per year
- Monitor recruitment work
 - Secure new funds for building a strong, focused recruitment program; and hire a full-time staff member (recruitment specialist) that will be charged with traveling the state and meeting with prospective students, their parents, alumni, etc.

Results and Analysis: Enrollment in the School of Agriculture showed a slight increase from the 2021-2022 academic year. Increased recruitment efforts have been in place in the College of Agriculture and Human Ecology for the past three years, and increases appear to be occurring.

Retention rates appear to be returning to normally high rates following the decline in the 2019-2020 and 2020-2021 academic years. Declines in these academic years were attributed to the COVID-19 epidemic. Survey data and personal communication between faculty and students make it clear that our students prefer on-site rather than online instruction.

The table assessing trends in graduation rates was modified to represent percentages of cohort enrollment rather than numbers of graduates. The current table adjusts graduation rates for differences in enrollment and will provide a better evaluation of trends and comparison of the new BS in Animal Science with the BS in Agriculture. A column to assess trends in transfer students has also been added. The 2021-2022 data showed an increase in graduation rates above the previous 2 cohorts of students but was not as high as it was in years previous to that. The decrease in 2019-2020 and 2020-2021 may be due to the move to online courses due to COVID-19.

Use of Results to Improve Outcomes:

The College of Agriculture and Human Ecology will continue emphasis on recruiting efforts and faculty participation in recruiting events will see improvement as new faculty will be hired to participate in recruiting efforts. A new recruiting specialist position for the Lawrenceburg campus has also been approved for hire which will aid enrollment.

PG 2: ENCOURAGE EXTERNAL FUNDING AND INCREASE STUDENT RESEARCH PROJECTS

Define Outcome:

Increase the amount of external funding (local, state and federal levels) and increase interaction of faculty and students so as to increase undergraduate research.

The goal is to have at least as many grant applications as there are faculty members. One of the purposes of the grants are to include undergraduates in the research process. The grants can be URECA, QEP, or other grants offered through national, state, or local organizations.

As a result of undergraduate research, the SOA would like to have at least 15 students present a research poster at the TTU Creative Inquiry Day.

Assessment Methods:

1. Review of Annual Faculty Reports in the research completed and research pending areas.
2. Monitor number of grants applied for.
3. Monitor number of students participating in the SOA student organizations.
4. Monitor the number of students presenting at the Creative Inquiry day.

Criteria for Success (Thresholds for Assessment Methods):

1. Monitor number of grants applied for.
 - The goal is to have at least as many grant applications as there are faculty members. One of the purposes of the grants are to include undergraduates in the research process. The grants can be URECA, QEP, or other grants offered through national, state, or local organizations.
2. Monitor the number of students presenting at the Creative Inquiry day.
 - at least 15 students present a research poster at the TTU Creative Inquiry Day

Results and Analysis:

The School of Agriculture has acquired 4 new faculty members in the past 3 years and the number of new grant applications and research endeavors have increased with this young faculty and are expected to continue to increase in the future. The Tennessee Tech Poultry Science Research Center was completed Spring Semester, 2023, a poultry science faculty member was hired last year, and research activity has already begun at that site.

RESEARCH AND SCHOLARLY ACTIVITIES OF FACULTY IN THE SCHOOL OF AGRICULTURE				
SCHOARLY ACTIVITY	YEAR			
	2022	2021	2020	2019
Externally Funded Projects Proposed	6	5	14	-
Internally Funded Projects Proposed	3	2	4	-
Externally Funded Projects Funded	4	1	3	2
Internally Funded Projects Funded	4	1	1	3
Number of Graduate Committees Chaired	4	4	7	6
Number of Graduate Committee Memberships	6	3	5	8
Number of Undergraduate Students Involved in Research Projects	14	—	6	7
Externally Funded Dollars Awarded	\$882,136	\$505,000	\$329,150	\$765,000
Internally Funded Dollars Awarded	\$57,176	\$10,000	\$13,204	\$8,850

Use of Results to Improve Outcomes:

The School of Agriculture anticipate hiring 2 faculty members in 2023 which will promulgate more undergraduate and graduate research. The School of Agriculture will be submitting an ENAPP for a Masters degree in Environmental Agriculture Technology at the end of the 2023-2-24 academic year which will provide faculty an direct conduit for research. The new poultry science building has provided opportunities for research activities in all agricultural disciplines.

PG 3: PROMOTE AND ENHANCE FACULTY AND STAFF DEVELOPMENT

Define Outcome: Promote and enhance faculty and staff development to the extent resources permit.

Assessment Methods:

1. Annual Faculty Reports in participation in research conferences and trainings.
2. Monitor budget increases in available funding to support research related and other professional training opportunities

Criteria for Success (Thresholds for Assessment Methods):

Six faculty was sponsored, attended and presented at their respective professional organization annual conferences.

Results and Analysis:

Faculty members in the School of Agriculture maintained a reasonable level of developmental activities compared to the previous year, and increased their level of service to national and local scientific and producer groups.

School of Agriculture Faculty and Staff activities				
	Year			
	2022	2021	2020	2019
Professional Organizations	10	7	18	14
Officer in Professional Organizations	2	2	2	4
Professional Meetings Attended	32	16	14	17
Refereed Conference Papers Published	8	10	7	4
Refereed Journal Articles Published	4	6	2	3

Use of Results to Improve Outcomes:

The Director is committed to provide travel money for presentation of scholarly publications for faculty, staff, and students. The prospective two new untenured faculty hires will also increase the promotion of faculty and staff.

SLO 1: PREPARED FOR EMPLOYMENT AND ADVANCEMENT IN AGRICULTURAL CAREERS**Define Outcome:**

Students will acquire the knowledge and skills to be prepared for employment and to advance in Agricultural careers.

Students will perform at or above the national average on the ACAT.

The School uses a national assessment tool (ACAT) to determine how prepared the students are for industry and graduate school. The main objective of all SOA curriculum is to prepare students for the global workforce and provide the tools necessary to grow as an individual.

Therefore, faculty and staff desire to see an increase in ACAT scores each year and to always be above the national average.

Students will participate in internships or field experience.

Assessment Methods:**1. Area Concentration Achievement Test (ACAT)**

- The Area Concentration Achievement Test (ACAT) assessment is administered to all final semester seniors in the SOA. This national assessment is an indication of how well prepared the students are for his or her chosen profession. According to ACAT, scores

range from 200-800 with a national average of 500 and a standard deviation of 100. Nationally in any given year, 68% of scores should fall between 400-600. Number of students involved in internships or experiential learning.

2. Number of students involved in internships or experiential learning.

- **Conversations and focus groups with stakeholders** (Tennessee Farm Bureau, TN Farmers Coop, TriGreen Implement, Perdue Foods, National Resources Conservation Services, and United States Department of Agriculture).

3. Alumni Survey

- The School of Agriculture Alumni Follow-up Survey is requested periodically from a large and varied array of alumni (2020 survey was requested of alumni graduating from 3 to 55 years prior to the end of Spring Semester 2020, and including all concentrations) provides feedback on the college academic experiences of alumni while completing their respective concentrations in the SOA, and the effectiveness of these experiences in the workplace. The last survey was conducted in 2020 and plans are to conduct another survey in 2022.

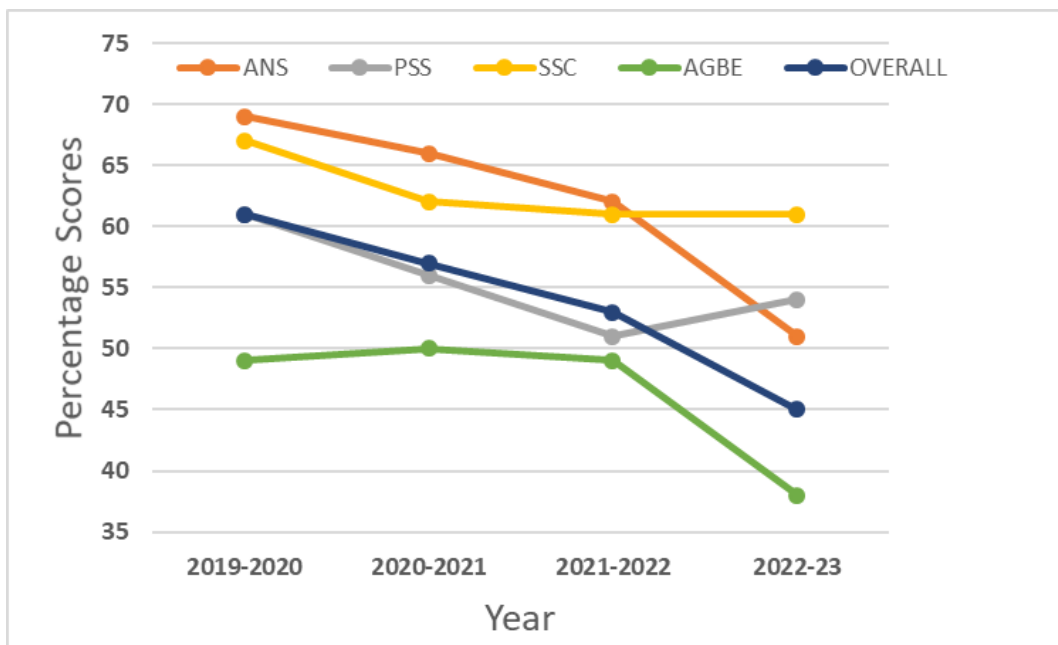
Criteria for Success (Thresholds for Assessment Methods):

Area Concentration Achievement Test (ACAT): Nationally in any given year, 68% of scores should fall between 400-600. At least 25% of School of Agriculture students involved in internships and 75% in experiential learning.

Results and Analysis:

Average ACAT Scores for the School of Agriculture						
	Percentiles by Concentration					
Year	ANS	PSS	SSC	AGMECH	AGBE	Overall
2022-2023	51	54	61	70	38	45
2021-2022	62	51	61	74	49	53
2020-2021	66	56	62	72	50	57
2019-2020	69	61	67	74	49	61
Average	62	55.5	62.75	72.5	46.5	54

ACAT scores of students graduating in Fall Semester, 2022 were much lower in almost all categories, but especially in the “Animal Science” and “Overall” categories. These percentage scores tended to decrease 2022-2023 scores, even when averaged with the Spring, 2023 cohort. Spring, 2023 scores were considerably higher and more consistent with other academic years, but were decreased by the Fall, 2022 scores. Examination of individual student scores showed a larger number of students making well below average scores that semester.



Alumni assessment of relationship of education in School of Agriculture to career duties			
	JOB RELATIONSHIP TO ACADEMIC MAJOR*	JOB RELATIONSHIP TO ACADEMIC MAJOR*	PREPARATION FOR ENTRY AND ADVANCEMENT IN AGRICULTURAL CAREERS**
Highly Related/ Highly Adequate	41%	48%	38%
Related/ Fairly Adequate	19%	8%	35%
Somewhat Related/ Adequate	18%	22%	16%
Hardly Related/ Somewhat Inadequate	5%	4%	4%
Not Related/ Highly Inadequate	17%	18%	7%
Alumni (N)	78	77	71
*Relationship Scale			
**Adequacy Scale			

Almost 90% of alumni respondents indicated that they were at least adequately prepared by their educational experiences to meet their present career responsibilities. However, almost one-fourth of alumni respondents are in jobs that are not directly or not at all related to their

current job duties. These results imply that their educational experiences have prepared them fairly well for whatever vocation they chose. The School of Agriculture will continue to strive to prepare students with adequate breadth as well as depth of preparation to meet their future needs.

Use of Results to Improve Outcomes:

Review of ACAT scores will continue with more thorough research into the student performance within their field of study for example, analyze the scores for plant science students within their own discipline. The low ACAT score results have prompted faculty to develop a strategy to incorporate test outcome into a portion of a Senior Exit course which will provide incentive for students to not dismiss the exam and create skewed results. The alumni survey will continue while adding new personal exit interviews and exit surveys that are similar to the alumni survey.

SLO 2: LEADERSHIP AND SERVICE

Define Outcome:

Beyond the classroom, students will engage in high quality scholarly and service learning activities designed to enhance leadership and service roles in food, agriculture, and natural resource systems.

SOA students will actively participant and serve in leadership roles in one or more clubs/organizations (e.g. National FFA, 4-H, Omicron Delta Kappa, Delta Gamma Sigma, MANRRS, and many others) - both locally and nationally.

Assessment Methods:

1. Review of student involvement with student organizations, service projects and competitions.
2. Review of faculty involvement with student organizations, service projects and competitions.

Criteria for Success (Thresholds for Assessment Methods):

Results and Analysis:

Internships in the School of Agriculture				
	Internships		Work Experience	
Year	Courses (n)	Students (n)	Courses (n)	Students (n)
2022-23	15	41	1	1
2021-22	12	40	0	0
2020-21	14	36	1	1
2019-20	12	27	5	5

Graduating senior assessment of benefit of courses in Work Experience, Internships, and Applied Agricultural Lab						
	PERCENT OF RESPONDENTS					
	WORK EXPERIENCE		INTERNSHIP		APPLIED LAB EXPERIENCE	
YEAR	2022-2023	2021-2022	2022-2023	2021-2022	2022-2023	2021-2022
Extremely Beneficial	53%	58%	62%	69%	58%	48%
Beneficial	20%	16%	23%	.	26%	35%
Fairly Beneficial	20%	21%	8%	13%	16%	17%
Hardly Beneficial	7%	.	8%	6%	.	.
Not Beneficial	.	5%	.	13%	.	.
Students (N)	19	15	16	13	23	19

Alumni assessment of benefit of Internships and Applied Agricultural Lab experience				
	PERCENT OF RESPONDENTS			
	INTERNSHIP		APPLIED LAB EXPERIENCE	
YEAR	2022-23	2019-2020	2022-23	2019-2020
Extremely Beneficial	72%	46%	40%	35%
Beneficial	.	22%	.	20%
Fairly Beneficial	16%	12%	32%	25%
Hardly Beneficial	4%	10%	14%	10%
Not Beneficial	8%	10%	14%	10%
Students (N)	25	41	65	83

The number of internship course or course sections and students enrolled in internship courses remained approximately the same relative to the 2021-2022 academic year and were higher than the 2 previous years. There does not appear to be an emphasis on increasing the level of experiential learning with the Work Experience course. More students receive applied training via Work-Study Scholarships, Special Topics and Senior Problem courses, and jobs working on the farms.

Use of Results to Improve Outcomes:

New faculty often bring new contacts where students have opportunities for internships. The COVID years have seemed to have made students withdrawn and the School of Agriculture is planning some study abroad trips which will provide students opportunities to grow. Also new faculty contacts will provide new internship opportunities for example the new poultry research center will bring new companies into the School that may need agricultural business or agricultural engineering technology interns.

SLO 3: CRITICAL THINKING AND PROBLEM-SOLVING ABILITIES**Define Outcome:**

Students will identify their critical thinking skill levels and problem-solving abilities through a variety of assessments structured to meet the demands of the individual concentrations and develop new strategies to increase their ability to think critically and problem solve.

SOA students will score at or above TTU's student body average on the California Critical Thinking Skills Test (CCTST).

Assessment Methods:

- **CCTST (California Critical Thinking Skills Test) results**
 - SOA seniors complete this national assessment in their final semester.
 - SOA students will score at or above TTU's student body average on the **California Critical Thinking Skills Test (CCTST)**.

Criteria for Success (Thresholds for Assessment Methods):

SOA students will score at or above TTU's student body average on the **California Critical Thinking Skills Test (CCTST)**.

Results and Analysis:

California Critical Thinking Skills Exam Results				
	Year			
Group	2022-2023	2021-2022	2020-2021	2019-2020
School of Agriculture	72	73.2	70.6	72
College of Agriculture and Human Ecology	72	72.8	74.8	72
TTU Total	*	75.2	74.4	75
CCTST Standards	*	73.3	74	74

*Data not yet available

The School of Agriculture appears to be somewhat successful in their efforts to improve average scores on the California Critical Thinking Skills exam. Though average scores were not as high as the average of graduating seniors of the University, students in the School of Agriculture did increase to the average of the CCTST standards. The faculty will continue to search for ways to improve our students' critical thinking skills.

Use of Results to Improve Outcomes:

Discussions to determine why students graduating in the School of Agriculture are scoring below the college and university averages on the California Critical Thinking Skills Test are continuing. It is difficult to effectively study other characteristics of our students that may relate to their scores on this test due to the fact that individual scores on our students are not reported. Thus, it is difficult to determine methods of improving skills among our students that may be correlated with their scores on the CCTST exam. In a general sense, the faculty are trying to incorporate more activities, assignments, and test questions into all courses to help our students improve their critical thinking abilities. A new course sequence was developed last year to help students develop critical thinking skills, AGR 3250 – Introduction to Research and AGR 3275 – Practical Applications in Research.

Summative Evaluation:

PG2: The goal of having 15 students present at the Tennessee Tech Creative Inquiry day was nearly met with 12 students participating. Although the goal was not met, it is encouraging with three open faculty positions out of 11 faculty. The 15 student presentations are still very attainable.

SLO3: The California Critical Thinking Skills Test results remain lower than desired.

Assessment Plan Changes:

Continuous evaluation of measurable outcomes and assessment methods continue as the Animal Science major has been removed from the agriculture BS.

List of Appendices:

Appendix 1: School of Agriculture Core Course Map

Appendix 2: School of Agriculture Program Goal 1 Tables and Charts – Enrollment, Retention, and Graduation

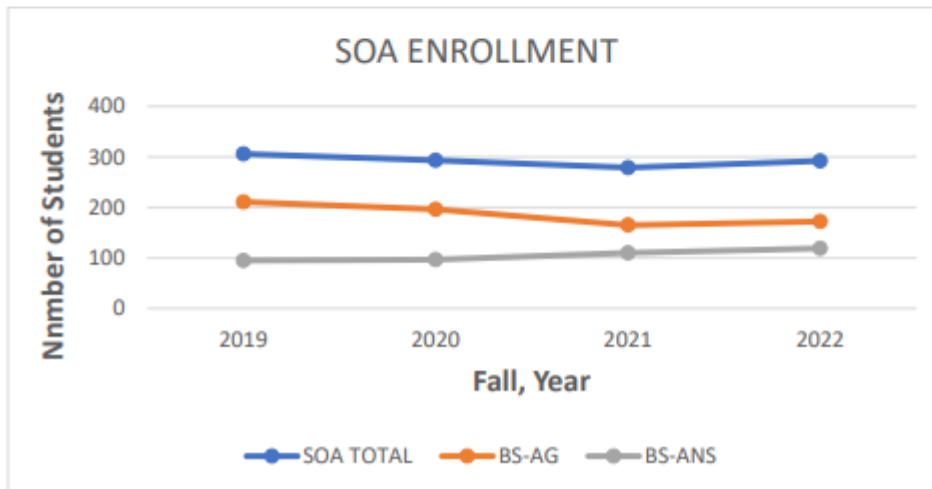
Appendix 1: School of Agriculture Core Course Map

Course No.	Title	Career Readiness	Critical Thinking & Problem Solving	Service Learning	Leadership
AGRN 1100	Plant Sci	x	x		
AGRN 1110	Plant Sci Lab	x	x		
ANS 1200	Intro Animal Sci	x	x		
ANS 1210	Intro Animal Sci Lab	x	x		
AGBE 2100	Economics of Ag	x	x		
AGET 2110	Ag Engineering Tech	x	x		
AGET 2115	Ag Engineering Tech Lab	x	x		
AGHE 1020	Connections in AGHE	x	x	x	x
AGHE 2022	Professionalism	x	x		x
AGHE 3000	Leadership & Service	x	x	x	x
AGHE 3200	Study Abroad	x	x	x	x
AGHE 3275	Research Processes	x	x		
AGHE 4500	Senior Seminar	x	x	x	x

Appendix 2: School of Agriculture Program Goal 1 Tables and Charts

PG 1: Enrollment

Enrollment Trends in the School of Agriculture					
Concentration	YEAR				AVERAGES
	2019	2020	2021	2022	
Agribusiness Management	81	73	59	56	67.3
Agricultural Communication	8	6	4	2	5.0
Agricultural Education	24	22	25	25	24.0
Agricultural Engineering Technology	52	46	29	31	39.5
Agricultural Science and Management	2	4	11	16	8.3
Agronomy and Soils	8	9	7	11	8.8
Environmental Agriscience	7	5	7	9	7.0
Horticulture	19	17	17	17	17.5
Nursery & Landscape Management	5	6	6	1	4.5
Turfgrass Management	5	3	2	4	3.5
All Concentrations	211	191	167	172	185.3
All DEGREES	306	288	281	291	291.5



Appendix 2: School of Agriculture Program Goal 1 Tables and Charts, continued

PG 1: Retention

School of Agriculture (SOA) retention rates (%)				
Year	Fall-to-Spring		Fall-to-Fall	
	First-Time Freshmen	Transfers	First-Time Freshmen	Transfers
2022-2023	94.1	90.5	--	--
2021-2022	94.1	92.6	76.5	82.4
2020-2021	85.7	80.8	71.4	65.4
2019-2020	90.9	86.9	77.3	67.2
2018-2019	93.3	94	86.7	78.6

PG 1: Graduation

School of Agriculture Graduation Rates (4-Year)		
Year	Percent of Enrollment that Graduates	
	Freshmen	Transfers
2021-2022	53.6%	80%
2020-2021	45.2%	--*
2019-2020	42.6%	78.3%
2018-2019	58.8%	72.2%
Averages	50.1%	76.8%
*Data not available		