

Institutional Effectiveness 2019-20

Program: Agriculture BS

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

Contact: Dennis W. Duncan

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 Agriscience, 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 (1800+ acres) expanded the possibilities for research and teaching with access to 700 plus cows and calves with additional cropland and potential locations for greenhouses and other agricultural enterprises. These facilities are not supported by direct line funding by the state and therefore must pay their own way, however, 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."

Program Goals

PG 1. Increase undergraduate student enrollment.

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 an 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.

- PG 2. 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.

- PG 3. Promote and enhance faculty and staff development to the extent resources permit.

Student Learning Outcomes

- SLO 1. 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.

- SLO 2. 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 participate 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.

- SLO 3. 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

PG 1: Enrollment, Retention, Graduation

1. Enrollment, retention, and graduation rates.

2. Monitor recruitment work

PG 2: Encourage external funding and increase student research projects

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.

PG 3: Promote and enhance faculty and staff development

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

SLO 1: Prepared for Employment and Advancement in Agricultural Careers

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.
3. 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).
4. 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.

SLO 2: Leadership and Service

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

SLO 3 - Critical thinking and problem-solving abilities

1. 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).

Results

PG 1: Enrollment, Retention, Graduation

CONCENTRATION	FALL ENROLLMENT BY YEAR:				
	2016	2017	2018	2019	2020
Agribusiness Management	80	84	82	81	74
Agricultural Communication	7	5	11	8	5
Agricultural Education	19	18	26	24	21
Agricultural Engineering Technology	52	45	46	52	50
Agricultural Science and Management	--	--	--	2	8
Agronomy and Soils	8	14	8	8	8
Animal Science	47	42	38	38	34
Animal Science - Pre-Veterinary Science	74	68	66	57	59
Environmental Agriscience	13	11	7	7	4
Horticulture	10	13	16	19	18
Nursery & Landscape Management	2	2	5	5	8
Turfgrass Management	4	5	6	5	4
TOTAL	319	308	311	306	293

Enrollment in the School of Agriculture continues to be steady, but 4% below the high point in 2016.

2017-2018 School of Agriculture (SOA) retention rates (most recent data)

	Fall-to-Spring Retention (%)	Fall-to-Fall Retention (%)
2017 Cohort	91.94	77.42
2018 Cohort	94.05	78.57
2109 Cohort	86.90	67.20

The School of Agriculture continues to maintain a retention rate higher than the average of the University.

Overall and Freshmen Enrollments

	Fall Total	% Change from prev. year	Fall Freshmen
2020	293	-4.25	72
2019	306	0.00	66
2018	306	-----	84

Enrollment of freshmen remains steady from 2018 to 2019, but below recent years.

School of Agriculture Graduation Results

	Total number of Graduates
2019-2020	63
2018-2019	71
2017-2018	78

The graduation rate in the School of Agriculture averages approximately 23% of our enrollment, in keeping with our retention rate.

PG 2: Encourage external funding and increase student research projects

SOA students (12) presented posters at the TTU Creative Inquiry Research Day at the Hoop. Three SOA students won awards for their collaborative research. Full abstracts are available at <https://publish.tntech.edu/index.php/PSRCI>.

More SOA faculty have been awarded grants through the TTU EDGE Creative Inquiry (CI) Curriculum Grant Program which have led to an increase in undergraduate research. Between 2013-2018 SOA faculty have secured over \$161,000 in small grants. As previously mentioned, numerous SOA faculty have been successful at securing TTU sponsored grants (CISE, QEP and EDGE). Additionally, SOA faculty have been successful at securing private, local, state and federally funded grants. The following table is a full listing of awards.

2018		
	Liz Mullens-TN Dept of Ag	\$85,000
	Dennis Duncan--TN Dept of Ag	\$14,400
	Brian Leckie--US Dept of Ag	\$300,000
	Brian Leckie--America Rivers / Tallassee Fund	\$17,150
	Brian Leckie--TN Dept of Ag	\$20,000
	O.P. McCubbins--TN Dept of Ed	\$222,416

Pat Bagley – Y-Tek	\$5,000
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	Amount	
	2018-19	2017-18
External Grants:		
SOA Faculty as PI (\$)	\$786,424	\$573,966
Cross Discipline Cooperative Grants (\$)	.	.
Submitted (Cross Discipline)		
Total Awarded (\$)	786,424	573,966
Student Research:		
TTU Research and Creative Inquiry Grants (\$)	.	.
Presentations:		
Student Research Day Participation	3	8
Student-Presented Professional Posters	.	.

PG 3: Promote and enhance faculty and staff development

Faculty and staff development activity for 2018-19.

	2018-2019	
	Number of Faculty	Number of Events
Research Projects Completed or Ongoing	6	16
Refereed Journal Articles	3	3
Professional Presentations	8	14
Graduate Committees	3	7
Graduate Committees Chaired	1	3
Professional Memberships	9	19
Professional Organization Officers	3	4
Professional Meetings Attended	8	19

Faculty in the School of Agriculture believe that they are making progress toward improving scholarly activity programs, but must continue to strive to increase the level of this activity as new faculty are hired and efforts to continue to improve faculty development and keep abreast of current knowledge in respective fields to prepare our students for careers in these fields.

SLO 1: Prepared for Employment and Advancement in Agricultural Careers

The following categories and scores represent spring 2020 SOA graduates: Animal Science (524), Plant Science (511), Soil Science (529), Ag Mechanization (505) and Agricultural Business/Economics (512).

Average ACAT Scores for School of Agriculture

	2016-17	2017-18	2018-19	2019-20
N	70	70	70	65
Animal Science (ANS)	541	526	524	525
PSS – Plant Science (PSS)	503	507	511	521
Soil Science (SSC)	547	554	529	519
Ag Mechanization (AGMECH)	532	528	505	550
Agri-Business & Econ (AGBE)	522	499	512	486
Overall	510	505	494	503

As evidenced in these results, SOA students meet or exceed the average score for each category. However, the SOA faculty and Director wish to see future scores well above the national average! This summary of average scores for all disciplines covered in the test will be updated annually to determine rates of progress and identify areas of needed improvements.

SOA students are highly encouraged and, in some concentrations, required to complete a 10-12-week internship and/or early field experience. Additionally, students are provided a cadre of opportunities beyond the traditional classroom setting to explore interest areas, practice a craft/skill(s), and reflect on their experiences. There were three study abroad trips offered - Scotland, Netherlands and Mexico - which included 4 School of Agriculture faculty member and 47 students total.

Results of the most current and previous Alumni Follow-up surveys have indicated that graduates are now pursuing careers, and with many previous alumni as potential employers, desire more experiential experiences in our curricula. Both alumni and potential employers have made comments regarding the need to provide our students with more expertise in skills ranging from practical agricultural methods to more experience with management information systems and personal relation skills.

SLO 2: Leadership and Service

The annual Farm Days/Agriculture in the Classroom in collaboration with TN Farm Bureau involved over 25 TTU students, 9 faculty and included over 1,800 elementary students and their teachers from across Putnam County.

SOA hosted a number of FFA events throughout the year - this involved over 20 TTU students and faculty (see attachment for total numbers).

SOA participated in both the state and national FFA conventions with the aid of TTU students (12-14). The TN FFA convention draws over 300 FFA members from across TN and the National FFA convention draws over 50,000 FFA members from across the US.

CAHE Recruiter and Dr. Dennis Fennewald participated in the Georgia FFA state convention. This convention draws over 5,000 FFA members from across GA. The Eagle Reach program was presented at the convention.

FFA members from across GA. The Eagle Reach program was presented at the convention.

SLO 3 - Critical thinking and problem-solving abilities

CCTST Results:

GROUP	ACADEMIC YEAR			
	2015-2016	2016-2017	2017-2018	2018-2019
School of Agriculture	17.2	18.7	15.7	13.9
TTU Total	16.9	17	17.6	16.8
CCTST Standards	≈17.1	≈16.2	≈16.2	≈15.4

Scores of graduating seniors in the School of Agriculture have fallen below both Tennessee Tech averages and standard scores for the past two years. Faculty discussions, informal interviews with students regarding attitudes toward the required exam, and other discussions with relevant entities have been conducted. The School of Agriculture faculty are sensitive to the need to improve the level of critical assessment and problem-solving skills in our students.

Modifications for Continuous Improvement

SLO 1: Prepared for Employment and Advancement in Agricultural Careers and SLO 3 - Critical thinking and Problem-solving Abilities

Between 2016-17 and 2018-19, average scores on the California Critical Thinking Skills Test (CCTST) declined from 18.7 to 13.9 in 2018-19, an indication that there is a need to address students’ problem-solving skills. There is also a need to provide students with more experiential learning opportunities, a finding that came out of the recent program review and the alumni survey conducted this past fall. Whereas almost of respondents rated the program’s practical agriculture experiences as adequate or higher (90%), many also commented that they would have liked to have had more hands-on experiences.

To address both concerns, faculty have decided to add a capstone course to the curriculum for each major concentration. The first such course will be implemented in Fall 2020 for students enrolled in the Agriculture Engineering and Technology concentration. In this course, AGET 4850, “Engineering Technology Design for Agriculture”, students are expected to participate in a supervised research project in an area of interest and prepare a written report. The impact on student’s critical thinking skills will be assessed in Spring 2021. Any changes in the perception of alumni with regards to experiential learning opportunities will be assessed when this survey is next administered in Fall 2023.

Appendices

1. SOA Core Course Map
2. SOA Employability Survey

Appendix 1: SOA 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: SOA Employability Survey

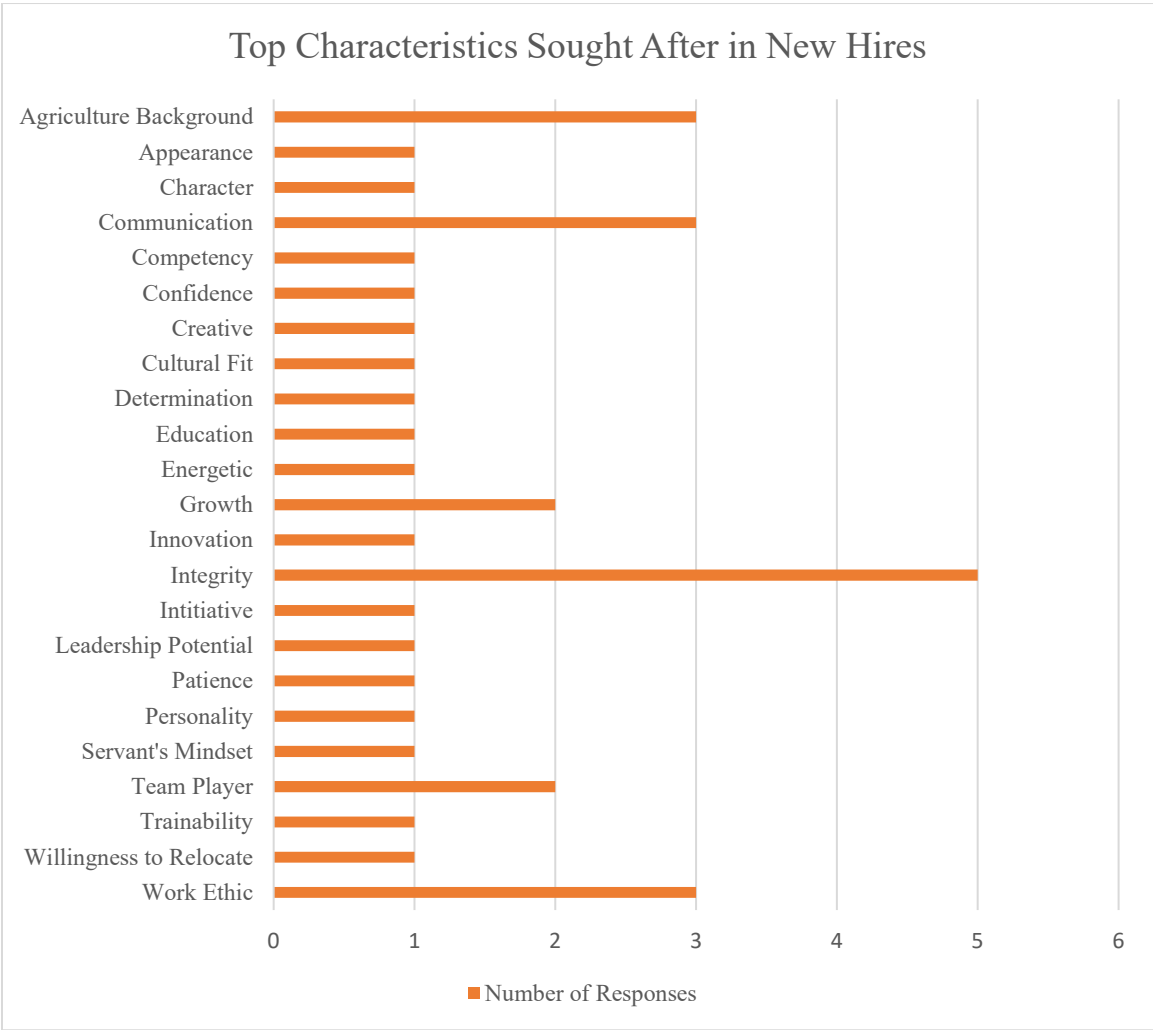
An Employability Survey of Characteristics in Recent College Graduates

Tennessee Technological University

Dr. Dennis Duncan

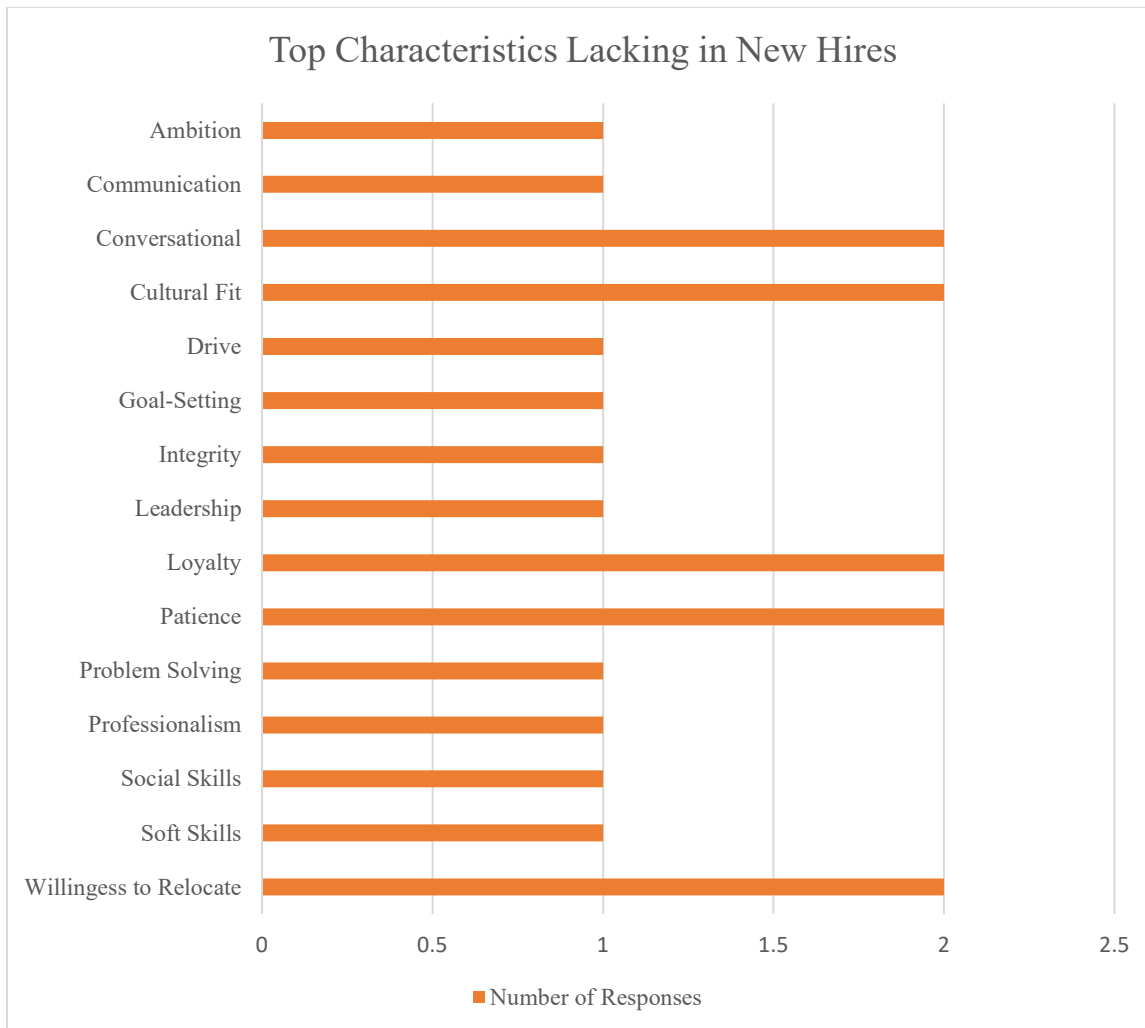
In a never-ending quest for creating the most employable college graduates, a survey was recently conducted of 14 prominent employers in the agriculture industry, asking what peaks their interest in recent college graduates as well as what strikes them as opportunities for improvement. The value of internships and international experiences were also evaluated. These responses were solicited through five simple questions.

Question 1: What are the top 3 personal characteristics of a new hire in your company?



Integrity, with six respondents indicating its significance, was a prevalent characteristic sought after in new hires for their organization. Other common characteristics included an agriculture background, a sturdy work ethic, and the ability to communicate with others.

Question 2: List 2-3 characteristics lacking in recent college graduates.

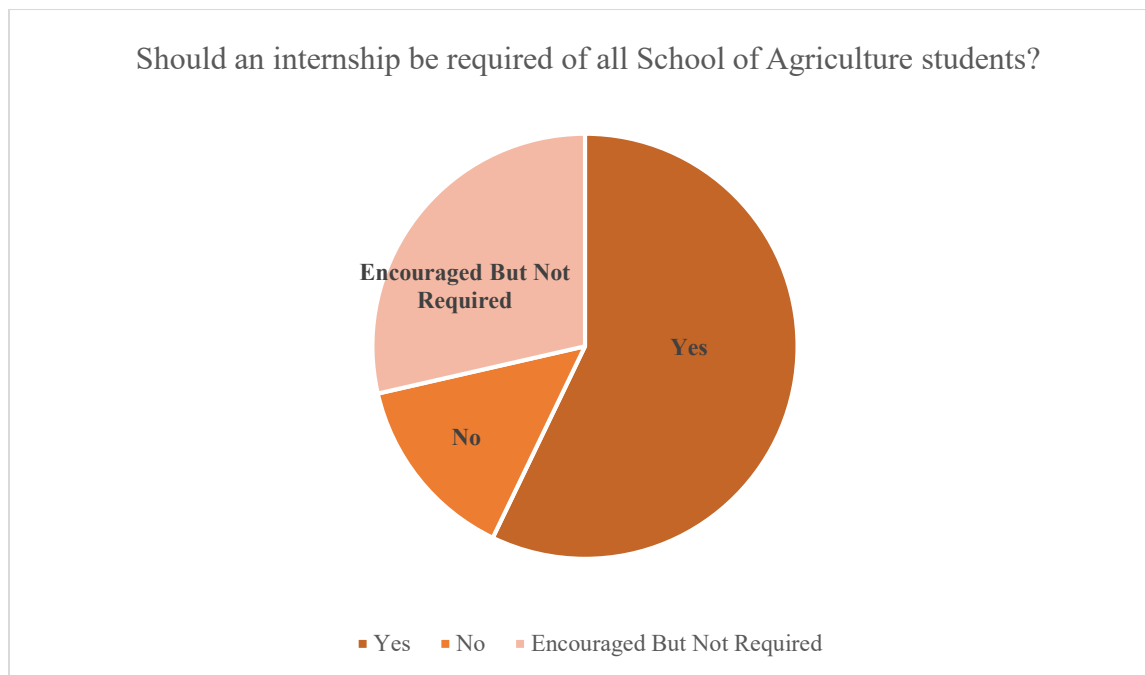


According to those surveyed, loyalty, patience, willingness to relocate, cultural fit, and conversational abilities are all characteristics commonly found to be lacking in new hires.

Question 3: Please share what you see as the benefits to study abroad/international experiences at the undergraduate level.

Respondents indicated only positive perspectives toward study abroad or international experiences. Coinciding with the characteristic currently lacking in new hires of unwillingness to relocate, study abroad/ international experiences exhibit willingness to relocate, an attractive quality for large-scale employers. Because agriculture is a global industry, many respondents stated that these experiences allow students to gain perspective in other cultures in regards to professionalism. Personal development is also a key factor in international experience. Open-mindedness, eagerness to learn and apply new ideas, operating outside of his or her comfort zones, bravery, and maturity were all personal qualities thought to result from international experience. One respondent also indicated that an entire semester is not necessary to gain all of these qualities, as a ten-day excursion can be equally as effective.

Question 4: Should an internship be required of all School of Agriculture students?



Question 5: What experiences should be included in an internship?

In order to gain the most value possible from an internship, many respondents indicated that the time with that particular organization should be multi-faceted and expose the intern to a variety of departments or roles. A set of measurable tasks that the intern can push himself or herself to accomplish by a given deadline is key to a meaningful internship experience. Timeliness, communicative development, and personal presentation/ appearance are all beneficial qualities for an intern to acquire as well. Many respondents stated that a personal or team project for the intern to manage allows supervisors to evaluate whether or not the intern will have opportunity for placement within the company as well. *Nearly all respondents indicated that a report or presentation discussing the entire internship should be required in order to allow the intern to reflect on the meaningful components and the qualities developed during their time with the company.*