Teaching/Undergraduate and Graduate Education

887 Perceptions of livestock practices by students entering introductory animal science courses. G. A. Holub*[1], C. T. Boleman[2], and S. W. Ramsey[1], *[1]Texas A&M University, College Station, [2]Texas AgriLife Extension, College Station.*

The purpose of this study is to determine attitudes of introductory animal science course students about common livestock management practices to alter teaching methods of the course based on the results. The IRB approved, anonymous survey was conducted for 3 Introductory Animal Science classes at Texas A&M University over the course of 2008 (n = 847). The study used an ex post facto approach and a correlational design. Quantitative data were analyzed using SPSS 15.0 for Windows software. Descriptive statistics were used to summarize data. Frequencies, percentages, central tendency measures, and variability measures were used to describe these data. The majority of respondents by category were male (63.0%), freshman (53.9%), less than 20 years of age (79.0%), and college of agriculture science students (50.7%). To determine the background of the students, they were asked to define where they were raised. The most frequent response was for "major city (over 100,000)" - 24.8%. This was followed closely by respondents from a "town (between 2,500 and 25,000)" – 22.2%, "rural" – 20.6%, "city (between 25,000 and 100,000)" – 18.9%, and "rural community (<2,500 population)" - 13.8%. Fourteen production practices were evaluated for acceptance by respondents The Likert scale used for acceptance was defined as 1 = Very Acceptable to 5 = Very Unacceptable. Seven of the 14 statements yielded mean values of less than 2.0. Six production practices yielded mean values between 2.0 and 3.0. Only one production practice yielded a mean value of greater than 3.0. The summary table shows the results of these analysis in order of acceptance by the students. Conclusions of the survey include half of the production practices are considered acceptable by the students before any teaching about the practices and half needed more emphasis by the instructor to enable students to have a more positive perception of the practice.

Table 1. Likert scale means for the acceptance of livestock production practices by introductory animal science students

Practices	N	Mean	SD
Vaccinate	845	1.21	0.54
Shearing	846	1.27	0.55
A.I.	846	1.61	0.85
Castration	842	1.83	1.03
Squeeze chutes	842	1.88	0.99
Ear notching	846	1.93	0.95
Dehorning	846	1.94	1.01
Feedlots	839	2.08	0.97
Auction market handling	840	2.09	0.93
Hot iron branding	846	2.13	1.09
Farrowing crates	839	2.54	0.90
Battery cages for laying hens	844	2.74	0.98
Separating calves/mothers	843	2.85	1.17
Debeaking	846	3.15	1.15

Key words: animal science, undergraduate, perceptions

888 Demographics and eating habits of students entering introductory animal science courses. G. A. Holub*[1], C. T. Boleman[2], and S. W. Ramsey[1], *[1]Texas A&M University, College Station, [2]Texas AgriLife Extension, College Station.*

The objectives were to determine the background and demographics and eating habits by protein sources (red meat, eggs, poultry and dairy) of students in introductory animal science classes to alter instruction for the semester based on the results. The study was conducted with 3 introductory Animal Science level classes at Texas A&M University in 2008 (n = 847). Frequencies, percentages, central tendency measures, and variability measures were used to describe these data. The majority of respondents by category were male (63.0%), freshman (53.9%), less than 20 years of age (79.0%), and college of agriculture science students (50.7%). Students were asked to define where they lived. The most frequent response was "major city (over 100,000)" - 24.8%, followed by "town (between 2,500 and 25,000)" – 22.2%, "rural" – 20.6%, "city (between 25,000 and 100,000)" – 18.9%, and "rural community (<2,500 population)" - 13.8%. Respondents were asked about their farming background, pet ownership, and eating habits. A total of 496 respondents (59.2%) were presently associated with farming and 93.1% had a family pet. With regard to eating habits, 96.7% classified themselves as meat eaters, while 3.3% classified themselves as either a vegetarian or vegan, but 757 respondents (89.7%) said there were no family members who were considered vegetarians. Respondents were asked to provide their consumption of animal food products by determining the number of servings they eat per week. The products included eggs, red meat, poultry, and dairy. For egg consumption, 455 (53.8%) respondents said they consume 1–2 servings per week, followed by 3–4 servings at 19.8%, and zero servings at 14.5%. Similar to egg consumption, dairy had a majority response where > 56% indicated they consume milk daily. Red meat and poultry were more evenly distributed as compared with eggs or dairy. A total of 268 (31.8%) respondents said they eat 3–4 servings of red meat per week and 222 respondents (26.2%) 5–6 servings per week. The leading category for poultry was 3–4 servings, 365 respondents (43.2%), followed by 253 respondents (30.0%) at 5–6 servings per week.

Key words: undergraduate, animal science, eating habits

889 Incorporating an issues survey assignment into an introductory animal science course. J. A. Sterle*, *Texas A&M University, College Station.*

Eighteen undergraduates enrolled in General Animal Science Honors course were required to develop, administer and interpret a survey about livestock industry issues. Objectives of the project were to 1) expose the students to scientific process, 2) investigate livestock issues in society, 3) increase understanding of interpretation of survey data, and 4) expose students to advocacy and agriculture education. Public perception of agriculture was discussed in-depth. Students responded as participants to a livestock production perception study, followed by discussion of each question's wording, possible misinterpretation, and overall bias. Students were allowed to choose survey topic, although exact duplicates were discouraged. Topics included livestock terminology, food safety, horse harvest, organic food, government grazing lands, gestation stalls, growth implants, and the general use of animals (pets and livestock) in society. Surveys varied in length and type of questions, although all had at least 10 questions. Students submitted several drafts before final printing. "Fact cards" was also developed

for each survey, consisting of 3–8 bullet points, educating respondents about the topic once survey was taken. One hundred copies of each survey were distributed. Students were allowed to determine audience and place of distribution. Students collected, recorded and analyzed data, and presented findings. They were also asked to present possible misinterpretations of results (i.e., by media or groups opposing livestock production). When surveyed about the project, students noted peer apathy about completing the survey. All students responded "a significant amount" when asked how much they learned by completing this project. Most students (75%) indicated a higher level of understanding of survey research, and 15/18 (83.33%) declared a preference to conduct the survey via internet. Students indicated that participants were concerned with answering the questions "correctly," even though they were asked opinions. Every student specified a "greatly improved" understanding of public perception of animal agriculture by completing the project.

Key words: teaching, issues, survey

890 Improving learning through integration of an upper division class with an introductory class in companion animals. J. P. McNamara*, *Washington State University, Pullman.*

To increase the depth and breadth of science understanding and application to animal nutrition and management, 2 courses at WSU: AS 205, Companion Animal Nutrition (General University Biology Course) taught to all classes and majors; and AS 464, Companion Animal Management, a primarily major course for seniors, have been used for the last 4 years in a project to integrate several levels of learning and application skills. The learning outcomes of the project were to increase scientific knowledge, media and information literacy, critical thinking across a wide spectrum, quantitative reasoning, working with groups to solve problems; and learning how to communicate to others. Lessons in the biology class investigated connections between nutritional chemistry, animal diversity, and practical decision making (use of pet food labels); or the biology behind the interaction of nutritional states and disease and their impacts on society. In the advanced class, students researched topics from the canine genome project and mechanisms of genetic diseases; to the human animal bond and how it affects economic and political decisions. Each advanced student then individually developed a teaching module on a broad topic to be used by the students in the introductory class. The course objectives in part read: To help you identify media and science concepts displayed in select videos and other media to relate media messages about scientific topics, or animals, to your own life and to society in general. To think critically about how media provides various messages, how they relate to animals and science, and how such messages and ads could influence others. Surveys (Likert Scale) from both classes over the last 3 years (60 students in advanced class; 450 students in introductory class; over 80% response rate) were approximately 78 to 85% positive on thinking critically, working on a team, improving information literacy and understanding interdisciplinary importance; and 90+ % on improving ability to "answer my own questions." Other faculty may be able to use such approaches to expand the role of Animal Sciences in overall university instruction and improve student learning.

Key words: companion animal, teaching, course integration

891 Internships and international collaboration in beef cattle reproductive management. K. G. Pohler*[1], D. A. Mallory[1], D. J. Patterson[1], M. F. Smith[1], J. L. M. Vasconcelos[2], R. F. G. Peres[3], and E. R. Vilela[4], *[1]University of Missouri, Columbia, [2]FMVZ - UNESP, Botucatu, SP, Brazil, [3]Agropecuária Fazenda Brasil, Barra do Garças, MT, Brazil, [4]Lageado Agricultural Consulting LTD, Mineiros, GO, Brazil.*

Recent advances in reproductive technologies in cattle (e.g., fixed-time artificial insemination [AI]) have created demand for qualified individuals capable of implementing these technologies. The University of Missouri developed a reproductive management internship in conjunction with Select Sires, Inc. (F. B. Miller Internship in Reproductive Management) to address this issue. Objectives of this internship include the following: 1) Provide undergraduate and graduate students with extensive practical training in the implementation of estrus synchronization (ES) and AI programs in beef and dairy herds, and 2) Provide students with the ability to solve "real world" reproductive management problems, both individually and as a team. Over the past 15 years, the internship provided opportunities for 156 students to work with over 190,000 heifers and cows in production settings in 12 states. Outcomes include the following: 1) Increased competency of students' reproductive management skills, 2) A deeper understanding of the US beef and dairy industries, and 3) A network of allied industry contacts, that expand career opportunities beyond the classroom. The internship was expanded in 2011 to provide graduate students with international experience in reproductive management. Objectives of this program include the following: 1) Gain extensive practical experience in implementing ES and AI protocols in large Brazilian herds, and 2) Provide students with knowledge of the Brazilian beef industry. Recently, 2 graduate students worked with over 20,000 beef heifers and cows located on more than 15 farms and ranches in 3 states in Brazil. A goal of the program is to promote future collaborations with Brazilian researchers and allied industry. Based on the placement of students into careers that involve implementation of reproductive management technologies (e.g., AI employees, veterinarians, extension specialists in reproduction, etc) the internship program has been successful. Supported by National Research Initiative Competitive Grant no. 2005–55203–15750 from the USDA Cooperative State Research, Education, and Extension Service

Key words: estrus synchronization, beef cattle, internship

892 Predictors of performance in an Animal Nutrition classroom. M. A. Soberon*, D. J. R. Cherney, and R. C. Kiely, *Cornell University, Ithaca, NY.*

Accurately identifying predictors of classroom performance better equips advisors to make course recommendations to undergraduate advisees as well as instructors striving to meet the needs of a diverse classroom. This research endeavors to discover predictive relationships between SAT scores, residency, transfer status, major, gender, grade in a recommended chemistry prerequisite (Chem) and performance in an animal nutrition course (Nutr; Cornell University). Data from a total of 443 students, representing 4 semesters (Fall 2007–2010) of Nutr students was collected from the CALS Registrar and analyzed using SAS 9.2. The instructor was the same and the class material was essentially unaltered during this time. All of the analyzed predictors were significant with the exception of major; this was affected by the low number of non-majors in the class. Final cumulative GPA was highly correlated with Nutr grade, indicating students with high grades in the course tend to also have a high cumulative GPA. The highest correlation for an analyzed predictor was Chem grade, with a significant Nutr grade difference for students who completed the Chem prerequisite (86.3 vs. 80.6). Twenty-nine percent of the students were transfer students. This research identified areas where predictors could be better

utilized for transfers. Although SAT scores are correlated with performance, they were not on record with CALS Registrar for 86.8% of transfer students. Moreover, transfers rarely take Cornell Chem. In a survey conducted for the fall 2010 class, students identified the following as influencing their grade in Nutr: study habits (81.2%), test taking (70.6%), transfer status (48% of transfers), animal experience level (27.1%), personal problems (24.7%) and class prerequisites (22.4%).

Table 1. Predictors of student performance in Animal Nutrition

Item		n	Grade	SE	*P*-value	r^2
GPA[1]		174	83.5	6.85	<0.001	0.450
SAT Math		299	84.4	7.83	<0.001	0.144
SAT Verbal		299	84.4	7.79	<0.001	0.152
Chemistry		227	86.3	5.90	<0.001	0.409
Residency	Resident	251	82.5	8.73	0.007	0.017
	Non-resident	192	84.8			
Transfer status	Four year	314	84.4	8.69	0.001	0.025
	Transfer	129	81.3			
Major	Animal Sci	403	83.5	8.80	0.854	0.00
	Non-major	40	83.8			
Gender	Male	107	79.0	8.42	<0.001	0.085
	Female	336	85.0			

[1]Graduated students only.

Key words: nutrition, predictors, teaching

893 Attitudes and knowledge of high school students about the department of animal industry of the University of Puerto Rico at Mayagüez. G. Ortiz-Colón*, J. M. Huerta-Jiménez, E. Jiménez-Cabán, and M. Pagán-Morales, *University of Puerto Rico at Mayagüez, Mayagüez, PR.*

The student enrollment in the College of Agricultural Sciences of the University of Puerto Rico at Mayagüez has been stagnant for at least the last 6 years. Within the College of Agricultural Sciences, the situation of the Department of Animal Industry (DAI) is not different. The DAI enrollment has declined in 7% over the last 6 academic years. The reasons for this phenomenon have not been previously investigated. We hypothesized that high school students of Puerto Rico did not understand the professional options a bachelor in Animal Industry has to offer. Surveys were developed to evaluate what knowledge high school students possessed about the DAI. Surveys (2,700) were distributed to 135 professionals (20 surveys /professional) of the Cooperative and Agricultural Extension Service who were assigned to visit at least one school in each of the 78 counties of Puerto Rico. A total of 726 surveys were returned representing students in 31 high schools representing 26 counties of Puerto Rico. Of the surveyed individuals, 75.8% were 15 to 16 years old and 57.6% were females. Most students (89%) were in 10th and 11th grade. The majority of the surveyed individuals (72.2%) had no experience in agriculture. Only 49.9% of the studied population could correctly define "animal industry." However, when students were asked to define the term "animal science," 78% did it correctly. Although only 7.4% of the surveyed population was interested in an animal industry academic program, 19.4% was interested in an animal science academic program. These data suggest that students do not understand the term animal industry and this could be limiting their interest in enrollment at the DAI. The data suggests that if the name of the DAI is changed to the Department of Animal Science more high school students might applied to this academic program.

Key words: Hispanic serving institutions, animal science, student recruitment

894 Mentoring underrepresented students through agricultural related research projects. J. S. Pendergraft*[1], R. M. Legere[1], and A. RodrÍguez[2], *[1]Sul Ross State University, Alpine, TX, [2]University of Puerto Rico, Mayaguez, PR.*

Sul Ross State University (SRSU) was awarded a Hispanic-Serving Institutional grant of $290,000 over a 4-year period to increase the number of underrepresented students entering and completing graduate school through developing a science-based mentoring program. To facilitate cross-cultural and cross-institutional collaboration, SRSU partnered with key personnel at the University of Puerto Rico at Mayaguez (UPRM). The research mentoring model allowed faculty to work with top graduate students to select a team of undergraduates that would work together on sustainable agricultural and biological research projects. Three projects were designed in the fall of 2010 to begin comparing student participation in the new research mentoring model with the successful managerial mentoring model at SRSU. These research projects were conducted utilizing 30 students, 3 faculty members, and 3 universities which included Eastern New Mexico University. Of the 30 participating students in the research projects 10 of them were underrepresented animal science students. This was a 50% increase in total participation and a 30% increase in minority participation compared with the projects conducted over 2 years in the managerial mentoring program. Notably, 2 of the 7 graduate mentors were Hispanic students. Thirty percent of the undergraduate participants were either freshmen or sophomores in classification and half of them were minority students. Undergraduate student participants represented 5 different Animal Science concentrations and Natural Resource Management degree programs. One of the mentors has been invited to attend veterinarian school at Kansas State University. The science-based research mentoring model developed at SRSU from the Hispanic Serving Institute grant will increase the quality of its postsecondary instruction while enhancing the educational equity for underrepresented students in agricultural programs. Acknowledgments: Dr. D. Smith, Eastern New Mexico University

Key words: Hispanic, experiential, mentoring

895 Graduate student course curriculum in animal science departments. R. F. Leuer*[1] and H. M. White[2], *[1]University of Minnesota, St. Paul, [2]Indiana University, Indianapolis.*

Graduate education in animal science is at a crossroads at many colleges and universities. As faculty numbers have dropped and research areas have become increasingly specialized, meeting all graduate student course needs has become increasingly difficult. An online survey was conducted during the summer of 2010 to assess the quality of graduate courses available within animal science departments. Onehundred respondents representing 34% MS and 66% PhD students studying nutrition, animal breeding and genetics, physiology, management and production systems, reproduction, and other areas, completed the survey. Only 50% of students were satisfied with the course curriculum offered within their department. Satisfaction was not affected ($P > 0.05$) by degree currently being pursued. Basic graduate courses were reportedly available to 72% of students and advanced courses were available to 61% of students. Dissatisfaction with the

basic course offerings tended ($P = 0.06$) to influence and dissatisfaction with advance course offerings influenced ($P < 0.05$) overall satisfaction. Students working with swine and equine species were less satisfied ($P < 0.05$) with overall course offerings than students working with beef, dairy, or poultry. The possibility of participation in internet-based courses to augment current classes appealed to 87% of students and PhD students were more supportive ($P < 0.05$) of this option. Support for online course options was higher ($P < 0.05$) among students who worked with beef, dairy, and swine compared with students working with equine, companion animals and small ruminants. Of 2 format options presented for online courses, more students indicated that they would prefer ($P < 0.05$) broadcasted live lectures compared with self-paced online tutorials (65 vs. 35%). These survey results indicate that graduate student course needs are not always being met and that gaps in course offerings in advanced subject areas influences overall course curriculum satisfaction. These results also suggest that future development of online courses, offered across universities, may augment current course curriculums.

Key words: graduate education, online courses, course curriculum

896 Increasing awareness of the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) website.
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The objective of this abstract is to increase awareness of the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) Web site and solicit materials for inclusion in the Animal Science section of the Agricultural and Environmental Sciences Community (www.merlot.org). MERLOT is a well-established reservoir of peer-reviewed free on-line teaching resources targeted for use in higher education. Its strategic goal is to increase the availability of quality online learning material and thereby improve the effectiveness of teaching. Materials found in MERLOT can be used for online course development as well as in web-enhanced face-to-face courses. Types of materials include animations, case studies, collections, drill and practice activities, learning objects, lectures, online courses, open textbooks, exams, reference material, simulations, tutorials, and training materials. Some ideas for using material found in Merlot include assigning supplemental readings, developing an assignment around a site, incorporating materials into presentations, and using online tools to complete assignments. The Agricultural and Environmental Sciences Editorial Board and online Community was established in 2010 and currently contains sections for the disciplines of Agriculture Education, Agriculture and Bio Engineering, Agriculture, Environment & Development Economics, Animal Sciences, Environment and Natural Resources, Food Science, and Plant Science. Online material is being solicited for all sections, including Animal Sciences. Submission of material for peer-review is open to all persons and easily accessed. Publishing materials on MERLOT offers the opportunity for faculty to contribute to the scholarship of teaching and learning.

Key words: MERLOT, teaching, online