

# Background Experience Affects Student Perceptions of the Livestock Industry

*A.L. Adams<sup>1</sup>, G.A. Holub<sup>2</sup>, W.S. Ramsey<sup>3</sup>  
and T.H. Friend<sup>4</sup>*  
**Texas A&M University**  
**College Station, TX**



## Abstract

Demographic information of students in introductory animal science courses allows instructors to tailor content to student needs and interests. This study compared student demographics with student perceptions of livestock production practices. Students in two introductory animal science sections (section A: n = 310, section B: n = 328) participated in a pre-course and a post-course survey. Both sections were comprised primarily of first-year undergraduate students; a majority was female with either horse experience or no livestock experience. Thirty percent of section A and 58% of section B was enrolled in the College of Agriculture. Forty percent of section A and 60% of section B had prior 4-H or FFA involvement. Pre-course, the sections disagreed on whether horses are pets or livestock, how media portrays agriculture, and whether slaughterhouse practices are humane. Post-course, more of section A than section B considered horses as livestock, and both sections agreed that media negatively portrays agriculture, weather has the greatest influence on producer success, and slaughterhouse practices are humane. These results suggest that students with no livestock experience may view agriculture differently than students with experience, but more exposure to livestock production issues may challenge students to evaluate their views of agriculture.

## Introduction

Instructors of introductory animal science courses are faced with the challenge of adapting their course content as the demographics and background experiences of their students differ each semester, with more students having less agricultural experience as the years progress. These differences in student demographics and background experiences may affect students' perceptions of agriculture, which may include common misconceptions perceived by the

public. The lack of knowledge about, or exposure to, agriculture production may be responsible for these misconceptions. For example, agriculture illiteracy has been documented in consumers (as reviewed in Terry et al., 1992), high school students (Smith et al., 2009), and elementary school teachers (as reviewed in Terry et al., 1992). Besides a lack of agricultural education, introductory animal science student perceptions may be influenced by student background experiences.

Differences in student perceptions of agriculture may be impacted by background factors that include each student's hometown, experience (or lack of experience) with an agriculturally-related organization, and home environment. For example, Frick et al. (1995b) showed that rural and urban inner-city high school students were more knowledgeable about topics in natural resources than agriculture, but the two groups differed as rural students had the least knowledge of agricultural plants and urban inner-city students had the least knowledge of agricultural policy. Furthermore, high school students who lived on a farm have been found to be more positive about farming than students who did not live on a farm (Smith et al., 2009) and urban elementary students who did not have gardening experience lacked an understanding of crop pests and their control in plant growth (Trexler, 2000). At the university level, Talbert and Larke (1995) noticed that minority students in introductory agriscience courses at one university tended to be from non-farm, non-rural areas and had more negative perceptions of agriculture and agriculture education. While it appears that a student's hometown and home environment may have a significant impact on the student's perception of agriculture, a student's involvement in agriculturally-related organizations may also play a role in how the student perceives the field.

While participating in agriculturally-related organizations such as 4-H or FFA, students may be exposed to

<sup>1</sup>Tom Slick Senior Graduate Fellow at Texas A&M University. Present address: Department of Animal Science, University of Minnesota, Saint Paul, MN 55108, 612.624.7455, aladams@umn.edu

<sup>2</sup>Department of Animal Science, 979.845.7616, gholub@tamu.edu

<sup>3</sup>Department of Animal Science, 979.845.7616, sramsey@tamu.edu

<sup>4</sup>Department of Animal Science, 979.845.5265, t-friend@tamu.edu

a wide array of agricultural issues and presented with opportunities to raise or handle livestock animals. Frick et al. (1995a) demonstrated that 4-H members who lived on a farm had more knowledge about agriculture than 4-H members who did not live on a farm. Also, 4-H members who lived on a farm and were enrolled in high school agriculture education classes had the most positive perceptions of agriculture. With the various background experiences of university students in introductory animal science courses, instructors of these courses would benefit from acquiring a better understanding of how different experiences alter student perceptions of agricultural practices. The objectives of this study were to document the demographics of two introductory animal science classes and determine if student background experiences correlate with student perceptions of livestock production.

## Materials and Methods

The Texas A&M Institutional Review Board Committee approved this study (Protocol #2011-0652). Participation in this study was voluntary and students did not receive an incentive for participation. The introductory animal science course was chosen for this study because the student population is more diverse in this course than upper-level courses and it is typically the first exposure students have to livestock production issues in the animal science curriculum at Texas A&M University. While the two sections (section A and section B) used in this study during the fall 2011 semester were instructed by two different professors, the course material for both sections was mutually agreed upon by both instructors.

Participants were asked to complete a 26-question multiple choice survey during the first lecture (pre-course) and the last lecture (post-course) of the semester. The survey included questions about student demographics, background experience, career objectives, and views on current issues in animal production. For every opinion-based question, each participant was asked to select the answer that best reflected his or her opinion. Student responses were analyzed using SAS 9.2 (SAS Inst. Inc., Cary, NC). Frequency analyses were conducted to describe the student population within each section. Pearson correlations and pooled or Satterthwaite t-test analyses were conducted to detect differences in student responses between sections.

## Results and Discussion

A total of 638 students (section A:  $n = 310$  and section B:  $n = 328$ ) completed the pre-course and post-course surveys for this study. Seventy percent and 75% of the student population in section A and section B, respectively, were female. Most participants were first-year students enrolled in either the College of Agriculture and Life Sciences or the College of Veterinary Medicine and Biomedical Sciences (Table 1). The majority of both sections had no livestock judging experience (section A: 78%, section B: 66%) and intended to pursue a

**Table 1. Demographic Information for Section A ( $n = 310$ ) and Section B ( $n = 328$ ) of an introductory animal science course.**

Demographic Category	Section A (% of students)	Section B (% of students)
Year in College Program		
1 <sup>st</sup> Year	54%	65%
2 <sup>nd</sup> Year	25%	25%
3 <sup>rd</sup> Year	15%	7%
4 <sup>th</sup> Year	6%	3%
College of Enrollment		
Agriculture and Life Sciences	30%	58%
Liberal Arts	2%	2%
Science	2%	3%
Vet Med and Biomed Sciences	56%	27%
Other	10%	10%
Most Handling Experience		
Horses	34%	35%
Cattle	19%	17%
Poultry	3%	4%
Swine	5%	8%
Sheep/Goats	9%	10%
None	30%	26%
4-H/FFA Involvement		
Both	10%	18%
4-H Only	5%	8%
FFA Only	25%	32%
None	60%	42%

career in veterinary medicine (section A: 65%, section B: 63%). Most participants had the most experience handling horses rather than any other livestock species, but had no previous involvement with the 4-H or FFA organizations (Table 1). Of the students in section A and section B that had livestock handling experience, 41% and 50% had more than six years of livestock handling experience.

A significant correlation ( $r = -0.27$ ,  $P < 0.0001$ ) was detected between course section and student college of enrollment where 56% of section A students were enrolled in the College of Veterinary Medicine and Biomedical Sciences and 58% of section B students were enrolled in the College of Agriculture and Life Sciences. Also, a significant correlation ( $r = -0.10$ ,  $P = 0.01$ ) was detected between course section and student 4-H/FFA involvement where 40% of students in section A and 58% of students in section B had 4-H and/or FFA experience. Pre-course, no significant correlations were detected between course section and student views on which species (cattle, horses, poultry, swine, or sheep/goats) is the most intelligent, whether animals have feelings, whether animals deserve respect from humans, and whether it is ethical to clone animals. However, significant correlations were detected pre-course between course section and five livestock production questions: 1) whether horses should be classified as pets or livestock ( $r = 0.14$ ,  $P = 0.0005$ ); 2) whether the media portrays agriculture in a positive, negative, or neutral fashion ( $r = -0.15$ ,  $P = 0.0001$ ); 3) what the greatest influence (weather, politics, or media) is on livestock producer success ( $r = 0.10$ ,  $P = 0.01$ ); 4) whether genetically-modified foods are safe for human consumption ( $r = -0.09$ ,  $P = 0.03$ ); and 5) whether current slaughterhouse practices are humane ( $r = 0.11$ ,  $P = 0.004$ ).

Both sections agreed (section A: 65% of students and section B: 65% of students,  $P = 0.79$ ) pre-course that horses are the most intelligent species when compared

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to cattle, poultry, swine, and sheep/goats. Also, both sections agreed that animals have feelings (section A: 94% of students and section B: 93% of students,  $P = 0.45$ ), deserve respect from humans (section A: 99% of students and section B: 98% of students,  $P = 0.22$ ), and that it is not ethical to clone animals (section A: 51% of students and section B: 52% of students,  $P = 0.56$ ). In contrast, section A students believed that horses should be classified as pets and the media portrayed agriculture in a neutral fashion, while section B students believed that horses should be classified as livestock ( $P < 0.0001$ , Figure 1) and the media portrayed agriculture in a negative fashion ( $P = 0.0004$ , Figure 2). Significantly more students in section A (69% of students) than section B (58% of students) believed when given a choice of weather, politics, or media, the weather had the greatest influence on livestock producer success ( $P = 0.0003$ ). Section A students claimed that genetically-modified foods are safe for human consumption (55% of students) and current slaughterhouse practices are not humane (53% of students). Significantly more section B students (66%) than section A students (55%) claimed that genetically-modified foods are safe ( $P = 0.003$ ). However, section A students (53%) claimed current slaughterhouse practices are not humane, but section B students (56%) claimed these practices are humane ( $P = 0.02$ ).

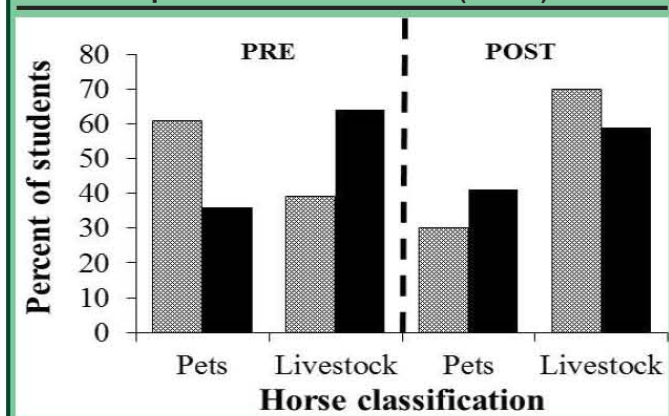
Post-course, no significant correlations were detected between course section and student views about whether horses should be classified as pets or livestock, whether animals deserve respect from humans, what the greatest influence (weather, politics, or media) is on livestock producer success, whether genetically-modified foods are safe for human consumption, and whether current slaughterhouse practices are humane. However, significant correlations were detected post-course between course section and student views on four livestock production topics: 1) which species (cattle, horses, poultry, swine, or sheep/goats) is the most intelligent ( $r = -0.16$ ,  $P < 0.0001$ ), whether animals have

feelings ( $r = 0.08$ ,  $P = 0.05$ ), whether the media portrays agriculture in a positive, negative, or neutral fashion ( $r = -0.09$ ,  $P = 0.03$ , Figure 2), and whether it is ethical to clone animals ( $r = 0.12$ ,  $P = 0.003$ ).

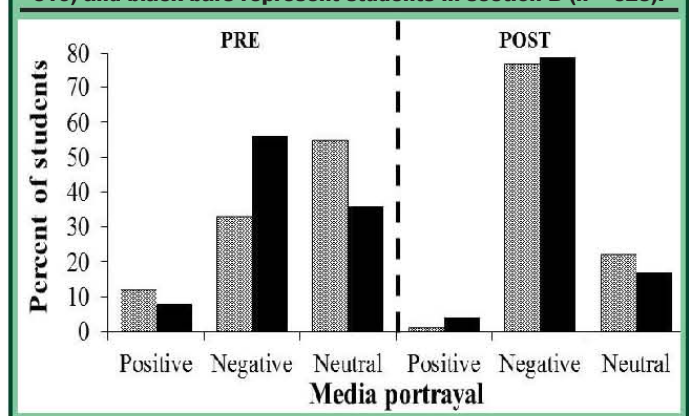
While the majority of both sections agreed post-course that horses should be classified as livestock rather than pets, significantly ( $P = 0.005$ , Figure 1) more students in section A (70% of students) than section B (59% of students) felt this way. Both sections also agreed that animals deserve respect from humans (section A: 99% of students and section B: 97% of students,  $P = 0.40$ ), weather (not politics or media) has the greatest influence on livestock producer success (section A: 52% of students and section B: 51% of students,  $P = 0.40$ ), genetically-modified foods are safe for human consumption (section A: 91% of students and section B: 89% of students,  $P = 0.48$ ), and slaughterhouse practices are humane (section A: 85% of students and section B: 89% of students,  $P = 0.12$ ). Post-course, the majority of both sections (section A: 51% of students and section B: 64% of students) believed that horses are the most intelligent species when compared to cattle, poultry, swine, and sheep/goats. However, significantly ( $P < 0.0001$ ) more students in section A (44% of students) than section B (27% of students) claimed that swine was the most intelligent species. The majority of both sections also believed post-course that animals have feelings (section A: 94% of students and section B: 89% of students) and it is ethical to clone animals (section A: 77% of students and section B: 67% of students), but significantly more students felt this way in section A than section B (animals have feelings:  $P = 0.05$  and ethical to clone:  $P = 0.008$ ). While the majority of both sections agreed post-course that the media portrays agriculture in a negative fashion, significantly ( $P = 0.05$ , Figure 2) more students in section A (21% of students) than section B (17% of students) believed that the media portrays agriculture in a neutral fashion.

The differences in student perceptions between the two sections in this study would suggest that back-

**Figure 1. Introductory animal science student responses when students were asked to classify horses as either pets or livestock animals. Students from two sections (section A and section B) were surveyed pre-course ( $P < 0.0001$ ) and post-course ( $P = 0.005$ ). The cross-hatched bars represent students in section A ( $n = 310$ ) and black bars represent students in section B ( $n = 328$ ).**



**Figure 2. Introductory animal science student responses when students were asked whether the media portrays agriculture in a positive, negative, or neutral fashion. Students from two sections (section A and section B) were surveyed pre-course ( $P = 0.0004$ ) and post-course ( $P = 0.03$ ). The cross-hatched bars represent students in section A ( $n = 310$ ) and black bars represent students in section B ( $n = 328$ ).**



ground experience may play a role in how students view agriculture, including issues related to animal intelligence and animal welfare. These results are similar to the findings in a study by Terry and Lawver (1995) that showed students from farm or ranch backgrounds had more favorable perceptions of food safety practices and animal welfare than students without farm or ranch background experience. Terry and Lawver (1995) also demonstrated that students from the College of Agricultural Sciences had more favorable perceptions towards food safety practices and animal welfare than students from the College of Arts and Sciences. Furthermore, Schibeci and Riley (1986) noticed that students' attitudes towards science and achievement in science were significantly affected by their home environments. While a student's home environment may play a role in how he or she perceives agriculture and science, it is important to also pay close attention to public perception and how media portrays agriculture to students.

A previous study by Rasmussen et al. (1993) asked students to compare the mental capabilities of school-age children with dogs, cats, birds, and fish. Students believed simple thinking could be completed by children and all the animals, but complex thinking could only be completed by children. While farm animal intelligence was not addressed in the previous study, a difference in student perceptions of farm animal intelligence was seen in the present study. Both sections believed that horses were the most intelligent farm animals before the semester began, but more students recognized swine as the most intelligent farm animal species at the end of the semester. Surprisingly, students in the present study also differed in their perceptions of horses as livestock animals or pets. The controversy of classifying certain animal species as either livestock animals (that would potentially be used for human food) or companion animals is worldwide. For example, university students in Spain differed in their perceptions of rabbits as livestock or companion animals (González-Redondo and Contreras-Chacón, 2012). From the present study, it appears that introductory animal science course instructors could benefit from recognizing their students' background experiences and how those experiences impact students' views of agriculture.

## **Summary**

Students enrolled in introductory animal science courses have varied levels of experience with, and knowledge of, livestock animal production that can make it more difficult for course lecturers to present course material that is appropriate for all the students. This study provided demographic information for students in two sections of an introductory animal science course and analyzed student perceptions towards livestock animal production practices and controversial animal welfare issues. Although it is unclear which background experiences influenced student perceptions towards agriculture, the distinct differences between the two

sections in regards to the student's college of enrollment, 4-H or FFA experience, and animal handling experience resulted in differences between the sections in student perceptions of animal intelligence and animal welfare.

## **Literature Cited**

- Frick, M.J., R.J. Birkenholz and K. Machtmes. 1995a. 4-H member knowledge and perception of agriculture. *Jour. Agr. Education* 36:43-49.
- Frick, M.J., R.J. Birkenholz, H. Gardner and K. Machtmes. 1995b. Rural and urban inner-city high school student knowledge and perception of agriculture. *Jour. Agr. Education* 36:1-9.
- González-Redondo, P. and G.M. Contreras-Chacón. 2012. Perceptions among university students in Seville (Spain) of the rabbit as livestock and as a companion animal. *World Rabbit Science* 20:155-162.
- Rasmussen, J.L., D.W. Rajecki and H.D. Craft. 1993. Humans' perceptions of animal mentality: Ascriptions of thinking. *Jour. Comparative Psychology* 107:283-290.
- Schibeci, R.A. and J.P. Riley. 1986. Influence of students' background and perceptions on science attitudes and achievement. *Jour. Research in Science Teaching* 23:177-187.
- Smith, E., T. Park and M. Sutton. 2009. High school students' perceptions and knowledge about agriculture based upon location of the high school. *NACTA Jour.* 53(3): 17-23
- Talbert, B.A. and A. Larke. 1995. Factors influencing minority and non-minority students to enroll in an introductory agriscience course in Texas. *Jour. Agr. Education* 36:38-45.
- Terry, R. and D.E. Lawver. 1995. University students' perceptions of issues related to agriculture. *Jour. Agr. Education* 36:64-71.
- Terry, R., D.R. Herring and A. Larke. 1992. Assistance needed for elementary teachers in Texas to implement programs of agricultural literacy. *Jour. Agr. Education* 33:51-60.
- Trexler, C.J. 2000. A qualitative study of urban and suburban elementary student understandings of pest-related science and agricultural education benchmarks. *Jour. Agr. Education* 41:89:102.