

Perceptions of animal agricultural technologies related to college freshmen demographics

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Introduction

In today's society the consumers determine the demand of products produced by farmers and ranchers. The science behind the practice is used to increase production and is essential to feeding the growing world, now and in the future. One of the greatest issues facing the world today is the impending population growth in the next 50 years. With 70% more food needed to feed the world using fewer resources the industry does not have room for miscommunication or perceptions. There is a huge disconnect between consumers, producers and researchers that needs to be breached to prevent this disconnection and inaccurate perceptions. With activist groups spreading their views of the agricultural industry, people are quickly losing trust in the ability of the farmer to provide a safe, viable product for them to consume.

This leads us to cultivating communicators with the ability to understand the language of the science and effectively communicate to the producers and consumers efficiently and accurately. The goal of this project is to get a sense of how students across the OSU campus, with differing backgrounds and experiences, perceive the industry that feeds and clothes them. Specifically, the survey will look into the how the students perceive the technologies used in animal production and how they view agriculture as a whole industry.

Statement of Problem

Though agriculturalists understand a disconnection exists between consumers and producers, the needed research has not been conducted to examine exactly where and how this disconnect occurs and what the best avenue for bridging this gap would be.

Purpose

The sole purpose of this research is to describe the demographics of college freshmen in relation to their perceptions of agricultural technology in livestock production. This will serve as a starting point for the industry in regards to how a variety of individuals with a wide-array of backgrounds and experience in agriculture perceive agricultural technologies in production agriculture.

Objectives

The following objectives guided this study:

1. Describe selected demographics of the study participants.
2. Describe the participants' perceptions of agricultural technologies in relation to livestock production in relation to the selected demographics.
3. Describe the relationships among participants' selected demographics and perceptions of agricultural technologies in livestock production.

Scope of the Study

The scope of the study was first-year students enrolled in all six colleges on the OSU-Stillwater campus at the beginning of the Spring 2016 semester. Study conducted solely based on first year classification in the university system regardless of age.

Limitations

The following limitations were identified for this study:

1. The researcher chose to use only respondents classified as freshmen by the university standards.
2. The instrument was available for a limited time frame.
3. Subjects may have revised their opinion or knowledge of agricultural technologies in the livestock industry from classwork or direct experience.

Assumptions

The following assumptions were made regarding this study:

1. Participants responded honestly and truthfully about their agricultural experience and their opinions of the technologies.
2. Participants understood the terminology used to describe certain practices portrayed in the mass media and under scrutiny in the industry.
3. Participants represented all freshmen students at OSU.
4. All respondents had access to the Internet.
5. Participants were freshmen-level students at OSU.

Review of Literature

The purpose of this section is to explore and review literature influencing this study and showing where the idea for this project stems from.

Public Concern

To fully understand to what extent the public is concerned about animal welfare it is important to first comprehend what aspects are of concern. According to McKendree et al. (2014), concerns for animal welfare stem from food safety and quality, the environment and human health. It is interesting to note how consumers respond to certain words pertaining to

agriculture, also. An individual's background and beliefs contribute greatly to how they perceive words and concepts (Rumble et al., 2014).

Demographics, values and morals also play a large role in the perceptions and opinions formed by the public about animal welfare practices (McKendree et al., 2014a). The volume of activist groups concerning the public and their acceptance of agricultural practices implies a majority of the population does not have positive feelings for the agricultural innovations and practices used today. However, the multitude of surveys distributed across the U.S. about public concern with animal welfare and practices used, reveal a specific population primarily concerned. McKendree et al. (2014a) reported young, female Democrats are generally more concerned about animal welfare. This result was confirmed in a survey distributed by Prickett et al. (2010), however, it was also discovered animal welfare concerns are primarily isolated in the Northeast region of the United States.

Many believe government regulation and intervention are the answer to averting the perceived animal welfare crisis. It should come as no surprise, the surveys also found Democratic individuals, along with locations of high population, were far more favorable of government regulation for production practices as opposed to Republican individuals and those living in rural locations (Prickett et al., 2010). It is interesting to note McKendree et al. (2014a) found individuals in the Midwest to be less concerned with animal welfare and were the most likely not to have a source for information pertaining to this. A concerning find since these are the individuals who should be most concerned about the information being distributed since it directly impacts their way of life and economy.

Individuals concerned with welfare practices have turned to vegetarianism and other consumption choices not supportive of conventional animal agriculture. Activists being the most

prevalent form of anti-agricultural campaigns, although, legislation has also heavily impacted animal welfare and production practices. In an article by J. L. Lusk (2008), every year roughly 60 or more animal welfare legislative bills are passed through the US Congress. An example of this would be the American Horse Slaughter Prevention Act. The perfect example of how public perception is a powerful tool in animal welfare no matter the necessity of it. This act started in California with Proposition 6 to prevent the slaughter of equine animals simply because they are perceived to be pets rather than a livestock animal for production use (Potter, 2014).

Consequences of legislation regarding animal welfare have led to overpopulation of horses and subsequently overregulation of farm practices. Changes to animal production practices will result in good or bad consequences for the environment, food safety regulations and the farm economy (Prickett et al., 2010).

It has been hypothesized that animal ownership plays a role in the level of interest people have in animal welfare. McKendree et al. (2014b) implied from their research results that pet owners are more likely to feel moral obligations to the well being of animals on and off the farm. This direct connection could be linked to the relationship pet owners develop with their animal and feel should exist between producers and production animals. In another study by McKendree et al. (2014b), it was found that two-thirds of the population surveyed owned animals, most commonly companion animals. It is common knowledge that most people are at least two generations removed from the farm. The McKendree et al. (2014b) also found that three-fourths of the population surveyed had not visited a production agricultural farm in the past five years. Without this first-hand experience by consumers, the perceptions they form are based off those formed by other people who presumably have not visited a farm either.

Animal welfare is a difficult topic simply because of where it is located in the decision-making and legislation process. It is wedged between the scientific evidence behind the practices and the level of social acceptability of the consumers (Lusk et al., 2008). It has been found in previous legislative action that social acceptability of production practices play a much larger role than it should in decisions regarding the food and agricultural industry. Consumer responses to how animal welfare situations should be handled are controversial, also. A survey by Lusk et al. (2008) revealed a majority of those surveyed believe science and experts should drive decisions about animal welfare practices. Ironically, most animal production practices are based on hard science rather than production yield or profit motives. Presumably, the real issue is how consumers perceive experts and the science of the practices.

Sources of Information

The German philosopher, Immanuel Kant, believed human's ability to rationalize, to use reason and to consider contingencies and counterfactuals, is what separated people from animals. According to McKendree et al. (2014b), moral obligations and discoveries of animal mental capacity contribute to the increased concern for animal welfare. Many people are far removed from the farm and view animals mostly as pets rather than production animals. This mentality has stemmed from the avenue through which people get their information about agriculture and animal welfare. PETA and HSUS appeal to the emotional side of consumers to get their messages across through social media and television. Unfortunately, consumers are not seeking out information about animal welfare simply because they do not want to face what they perceive to be "unpleasant feelings of discomfort" (McKendree et al., 2014a).

McKendree et al. (2014a) reported of the people who do seek out information about animal welfare, nineteen percent use PETA or HSUS outside of the fifty-six percent of people

who do not have a source for animal welfare information. Most consumers run across information about agriculture when there is a crisis covered by news organizations and the media (Goodwin et al., 2011). This generally leaves a negative connotation for agriculture; simply because the only coverage it receives is focused on averting a crisis. This leaves consumers with the impression that production agriculture only addresses issues when they are leaked to the public. Social media has grown to become a major source of information for many topics in the world including agricultural issues (Holt et al., 2013).

Agricultural advocates have been seen on YouTube, Facebook, Twitter and even personal blogs. These personal first-hand accounts of production agriculture are exactly what consumers are seeking for information about agriculture. Documentary films are one form of media that has attempted to inform consumers about the industry (Holt et al., 2013). With films like *Food, Inc. King Corn* and the *World According to Monsanto*, in circulation, consumers' perceptions are formed primarily through various types of media rather than the producers themselves. Traditionally, producers have worked their operations with little regard for informing the public of what they do and why they do it day in and day out. This has led to the problem agriculturalists are currently facing, when those who have first-hand experience legitimately in the field refuse to share this information those outside of the industry go looking for it in all the wrong places.

Review Conclusions

Based on responses to the information currently circulating in multiple literature and media avenues, people read the information but immediately dismiss it. In a survey done by Goodwin et al. (2011), it was found people perceive information about practices; safe and quality products; scientific, social and economic findings to elicit feelings of mistrust and skepticism.

The information is available, however, it is evidentially being presented in a way consumers feel is misleading or inaccurate. An interesting find by Goodwin et al. (2011) was that people have negative perceptions of messages coming from businesses and corporations, “factory farms.” Consumers have a tendency to trust first-hand messages from individual farmers rather than from what they believe to be “factory farms” with what they presume to have vested interest in profit margins. All the studies and surveys done simply confirm what most modern agriculturalists already know: agriculturalists need to be positive and understanding advocates for their industry.

Out of the sources of information used by consumers, organizations and experts in the industry were sought after less often than organizations such as PETA and HSUS. This result implied consumers believed sources from organizations affiliated with agriculture to be less concerned with animal welfare, untrustworthy or not “user friendly” (McKendree et al., 2014). The Democratic, young females in the Northeast region of the United States, who are primarily concerned with animal welfare, are greatly influencing many consumers to mistrust the industry that has fed and clothed them. This mistrust and skepticism has created uproar from consumers demanding the attention of agriculturalists. Agriculturalists are now taxed with effectively communicating with the consumers about animal production and the role it plays in feeding and clothing them.

Methodology

This section explains the methods and procedures used to conduct this study. This includes approval by the Oklahoma State University Institutional Review Board (IRB), research design, instrumentation, population, data collection and data analysis.

Institutional Review Board

Oklahoma State University policy and federal regulations require approval of all research studies related to human subjects before researchers can begin their research. The Oklahoma State University Office of University Research Service and the IRB review research methods to protect the welfare of human subjects involved in biomedical and behavioral research. This study was reviewed by the OSU IRB and was approved on November 17, 2015 (see Appendix A). The IRB application number assigned to this study was AG-15-51.

Research Design

A survey research method was employed to describe the perceptions of animal agricultural technologies of the freshmen at OSU in relation to their academic college, demographics and agricultural experience. The advantage to using a survey research design is the ability to reach a high number of participants in a short-time frame.

Population and Sample

The population of this study included students classified as freshmen or first-year students enrolled at OSU for the Spring 2016 semester (N = 3,020). Of this population, 492 students (n = 492) completed the questionnaire, resulting in a response rate of 16.29 percent.

Instrument Design

This instrument was developed based on previous on-going research about public opinion related to the ethics and governance of animal welfare (Lusk et al., 2008) and consumer preferences related to farm animal welfare (Prickett et al., 2010). The original instrument designed by Lusk et al. (2008), was used to build “a survey to determine the public opinion about the ethics and governance of farm animal welfare.” The instrument for this specific study was also heavily influenced by the survey developed by Prickett et al. (2010) to determine “consumer

preferences for farm animal welfare.” A pilot test of 50 sophomore students was ran on the final instrument to determine quality of the questions selected for the study.

The instrument used to distribute the study was housed in a Web-based software program, www.Qualtrics.com. This included questions collecting demographic information and personal perceptions of specific agricultural technologies used, as well as agricultural experience and current academic college.

By choosing to participate in the study it was presumed respondents gave their consent to participate to meet IRB requirements. Participants were informed their responses would remain anonymous and this study presented minimal to no risk for them. Freshmen respondents were incentivized to complete the survey by being entered into a drawing for one of three OSU gift cards. Respondents interested in being eligible for the gift cards were prompted to input their name and email address in a second survey after completing the study survey. Participants’ responses were not connected to their name or email once entered into the second survey.

Data Collection

A web-based questionnaire was administered to all students classified as freshmen or first-year students at the university. This was sent using the student’s OSU e-mail addresses provided through the university (see Appendix A). The initial email prompting students to participate in the survey was sent on Wednesday, February 17, 2016. A second reminder email to again prompt students to participate was sent on Tuesday, March 1, 2016. The survey officially closed on Tuesday, March 15, 2016. Participation in the study was voluntary.

To increase participation in the survey students who completed the survey were given the option to enter their name and e-mail address for a chance to win one of three \$50 OSU Student

Union Store gift cards. The winning students were selected at random and notified through their email provided.

Data Analysis

Data for this study was analyzed using IBM SPSS Statistical Software.

The first research objective asked for selected demographics of students. This included participants' age, sex, ethnicity, academic college at OSU, agricultural experience, high school graduating class size, availability of agricultural education in high school, experience with certain animals and the nature of this experience. Participants' responses were analyzed for frequency and then related back to selected questions in the study. The second research objective was to determine participants' perceptions of agricultural technologies in relation to livestock production. The frequency of these responses were analyzed and then correlated back to certain demographic characteristics. Certain questions required open-ended responses to allow students to accurately respond. These responses were compiled and were analyzed simply for frequency.

Conclusions, Recommendations and Discussion

Findings Related to Objective One

Objective one described specific demographics and personal characteristics of the study participants, including: age, sex, ethnicity, academic college, size of high school graduating class, agricultural experience, specific animal experience and availability of agricultural education or FFA classes in high school.

Objective one: Demographics

Age:

The mean age response was 18.4. The youngest respondent was 18 and the oldest respondent was 26. There were 101 missing responses from this category. There were 220

students (56.27%) who reported to be 18 years old. One hundred and sixty-four (41.94%) of respondents reported to be 19 years old. One respondent reported to be 17 years old, thus this students responses were pulled form the population and the study.

Sex:

The biological sex of the respondents was reported as follows: 312 students (63.29%) were female and 181 students (36.71%) were male. All students chose to answer this question.

Ethnicity:

Students were asked to identify their racial or ethnic group they most closely identified with. Three hundred and eighty-seven respondents (78.8%) identified as Caucasian. One student chose not to answer.

Table 1: *Distribution of Respondents by Racial or Ethnic Group (n = 492)*

Group	f	%
African American	20	4.07
Asian	11	2.24
Caucasian	387	78.86
Hispanic	17	3.46
Multi-Racial	13	2.64
Native American	42	8.55

Note: Percentages do not reflect non-respondents.

Academic College:

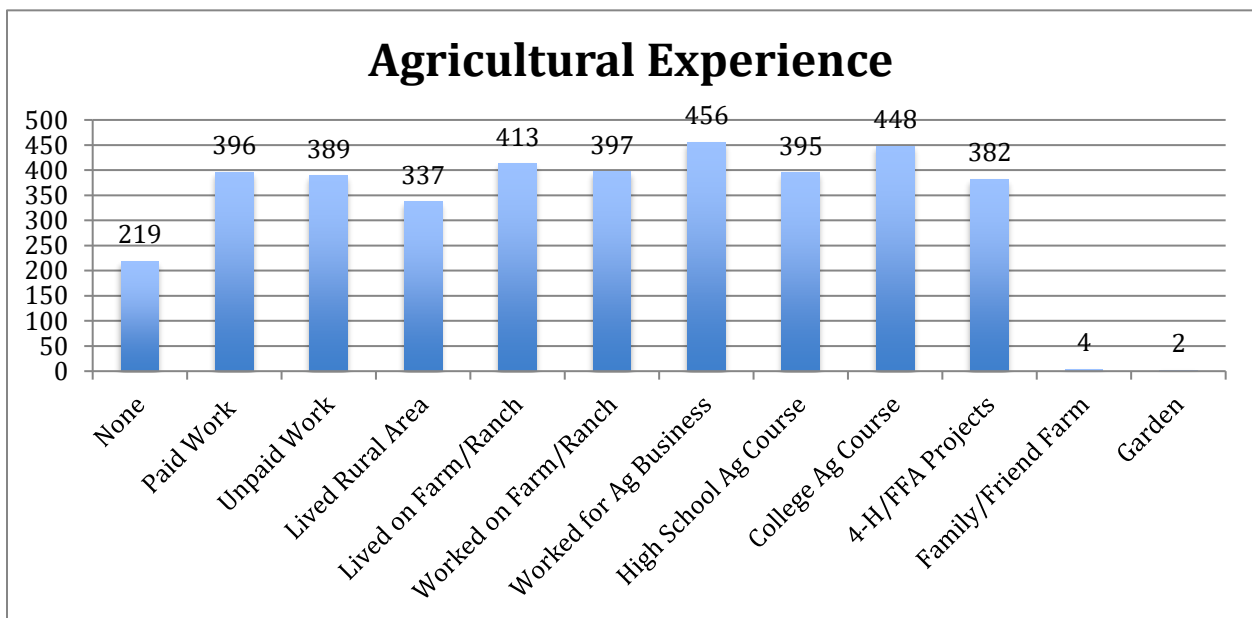
One hundred and twenty-nine respondents (26.21%) identified the OSU College of Engineering, Architecture and Technology as the academic college housing their major. The College of Arts and Sciences also had 129 students (26.21%). The College of Agricultural

Sciences and Natural Resources had 81 students (16.46%) respond to the survey. Spears School of Business had 70 students (14.2%) respond to the survey and the College of Human Sciences had 42 students (8.53%) respond. With the College of Education having 41 students (8.33%) respond, respectively.

Agricultural Experience:

Students were asked to indicate if they personally had agricultural experience. Two hundred and seventy-three respondents (55.48%) indicated they did have agricultural experience. While 219 respondents (44.5%) indicated they did not have agricultural experience.

Table 2: *Distribution of Respondents' Agricultural Experience (n = 492)*



Graduating High School Class Size:

One hundred and fifty-eight respondents (32.11%) reported their high school graduating class to be greater than 500; 80 respondents (16.26%) graduated with 51-100 students; 74 respondents (15%) graduated with 101-200 students; 68 respondents (13.8%) graduated with 301-500 students; 64 respondents (13%) graduated with 50 or less students; and 48 respondents (9.75%) graduated with 201-300 students.

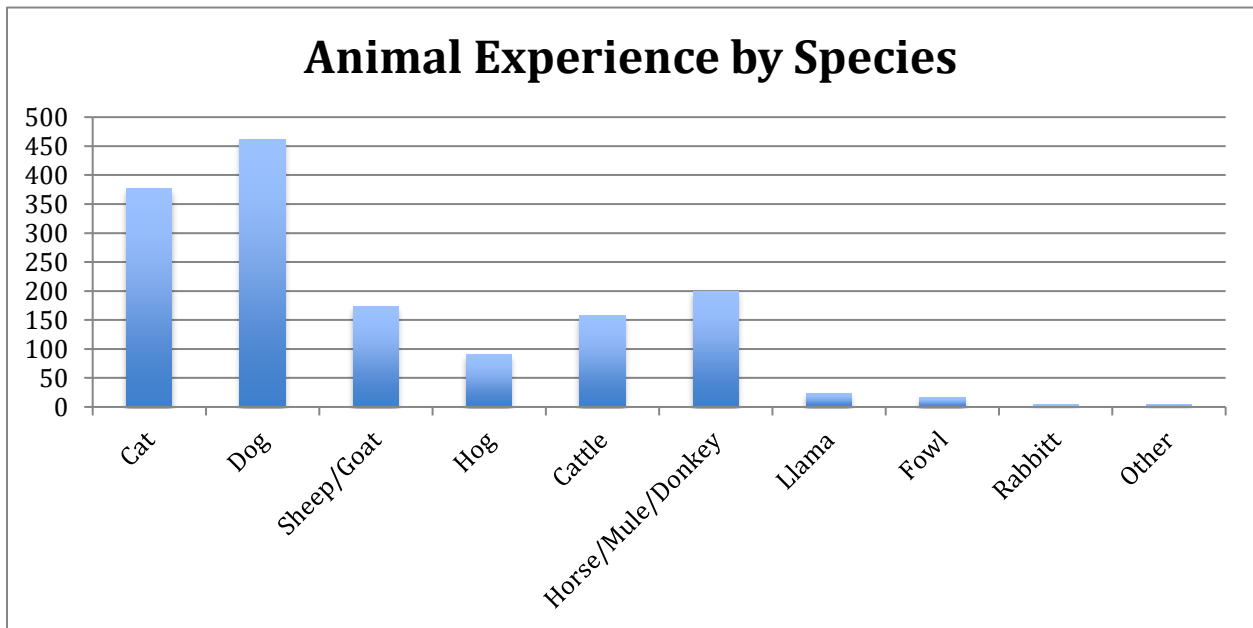
Agricultural Education or FFA classes offered in High School:

Students were asked if the high school they graduated from offered agricultural education class or FFA classes. Three hundred and thirty-seven respondents (68.49%) reported that their high school offered agricultural education or FFA classes. One hundred and twenty-seven respondents (25.81%) reported their high school did not offer these classes. And 28 respondents (5.69%) did not know if their high school offered these courses.

Animal Experience:

Students were asked to identify the animals they had experience with in the past. They could choose multiple options from a list of eight animals with a ninth open-ended answer to fill in as needed.

Table 3: *Distribution of Respondents Animal Experience by Species (n= 492)*

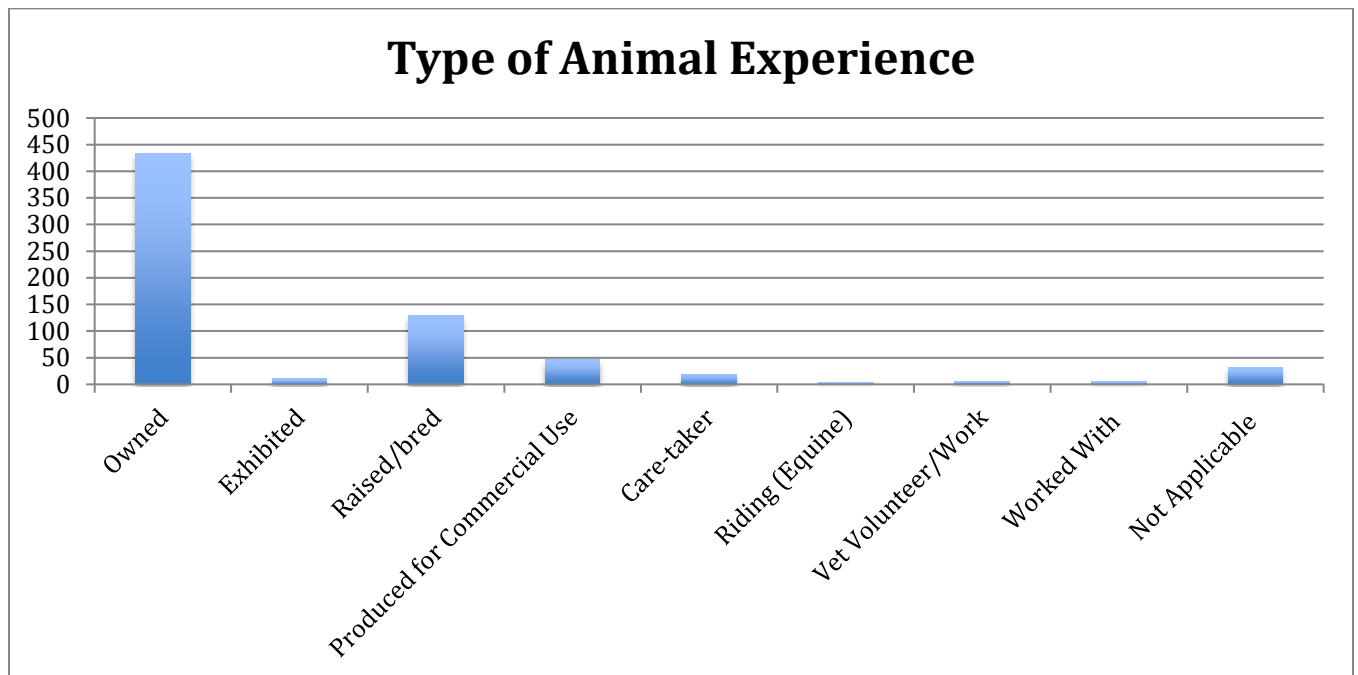


Primary Experience with Animals:

Students were asked to identify the type of experience they had with animals.

Respondents could choose from “owned,” “exhibited,” “raised/bred,” “produced for commercial use,” “not applicable.” The final answer option was open-ended to fill in as needed.

Table 4: *Distribution of Respondents’ Animal Experience by Type*



Objective two: Perceptions

Objective two aimed to describe the participants’ perceptions of agricultural technologies in relation to livestock production and allow for the third objective to make connections between these perceptions and selected demographics of participants presumably leading to them.

Farmer/Producer Influence:

Students were asked identify out of four choices what did not influence farmer and producer decisions about what type of product to grow and how it should be processed. Out of the 409 students who responded 259 students (63.32%) stated “historical events” did not influence farmer and producer decisions. Another 64 students (15.6%) stated “specific commodity prices” were not influential. Fifty-five students (13.44%) stated “consumer

preferences” were not influential and 31 students (7.57%) stated “government regulations” were not influential.

Perceptions:

The remaining 17 questions asked students yes or no questions about specific agricultural technological practices in addition to questions addressing the perceived cognitive abilities of animals. Some questions also addressed the motives of producers, nutritional value of certain products and the future need for farming. The following graphs depict the responses recorded for each question separated out by question number.

Table 5: *Distribution of Respondent’s Answers to Questions Pertaining to Animal Well Being and Cognition (n = 492)*

Question Set One	Yes	No
1. Do you believe the quality of the U.S. food supply directly correlates with the well being of production animals?	388	104
2. Do production animals have the same cognitive ability to feel pain and discomfort as humans do?	419	73
3. Should production animals be treated similar to humans based on their cognitive abilities?	289	203
4. Do production animals have the same thinking and decision-making abilities as humans?	93	399
5. Do you believe farmers and food companies put their own profits ahead of treating production animals humanely? (Two students did not answer)	341	149

Note: Two students did not respond to the last question in this series.

This first series of questions were geared towards how people perceive animals thus leading to some of the main issues the livestock industry currently faces with the scrutiny of their practices. Philosophically many theories have been speculated to describe the moral obligations people have towards animals and most are not supportive of current animal agricultural practices. “It is not an act of kindness to treat animals respectfully. It is an act of justice. It is not ‘the sentimental interests’ of moral agents that grounds our duties of justice to [animals]. It is respect for their inherent value,” (Reagn et al., 2008).

Though many agriculturalists believe in the humane treatment of animals the real issue is showing how these technologies are doing just this. The sentimental value and personification of animals has led to a lot of these negative emotions towards agriculture. This will be explored in more depth in objective three findings.

Table 6: *Distribution of Respondent’s Answers to Questions Pertaining to Agricultural Technologies in Animal Production*

Question Set Two	Yes	No
1. Do you believe chicken or raw eggs raised in cage-free or free-range environments are more nutritious than those raised using conventional methods?	260	232
2. Do you believe housing pregnant sows (pigs) in crates for their protection from other pigs is humane?	275	217
3. If hormone-free milk were available on the market for a higher price than regular milk, would you consider purchasing it?	248	243

Note: One respondent chose not to answer question three in this series.

This second set of questions gets to the heart of three major controversies in the production animal industry. These three were chosen for their prominence in the media and discussion in a variety of classes across the OSU campus.

Table 7: *Distribution of Respondent's Answers to Questions Pertaining to Media Imagery of Animal Agriculture (n = 492)*

Question Set Three	Yes	No
1. Do you believe farmers benefit from mistreating or having low standards of animal welfare for the production animals?	253	238
2. Do you believe production animals raised on small farms have a better life than those raised on large farms?	379	113
3. Do you believe it is necessary to butcher a dairy cow to harvest her milk for dairy products?	47	445

Note: One respondent chose not to answer for question one in this series.

Question set three was geared toward addressing participant's feelings towards farmers and "big business" agriculture. The third question in this series was based on information gathered simply through observation while on the OSU campus. One student thought this to be true making me wonder how many other people thought it was necessary to butcher a cow simply to harvest her milk. It should be taken as more of a wake-up call as to how far people really are removed from the actual farm and their level of understanding of how things are done.

Table 8: *Distribution of Respondent's Answers to Questions Pertaining to Food Prices, Government Regulation and the Future of Farming (n = 492)*

Question Set Four	Yes	No
1. Do you believe food prices would increase if standards of animal welfare	429	63

were raised?		
2. Do you believe low food prices are more important than the well being of production animals?	116	375
3. Do you believe the government should be mandating the well being of production animals across the nation?	360	132
4. Do you believe farming will eventually not be necessary to sustain life in the near or distant future?	61	432
5. Do you utilize social media to learn about agricultural practices?	123	370

Note: One respondent chose not to answer question two in this series.

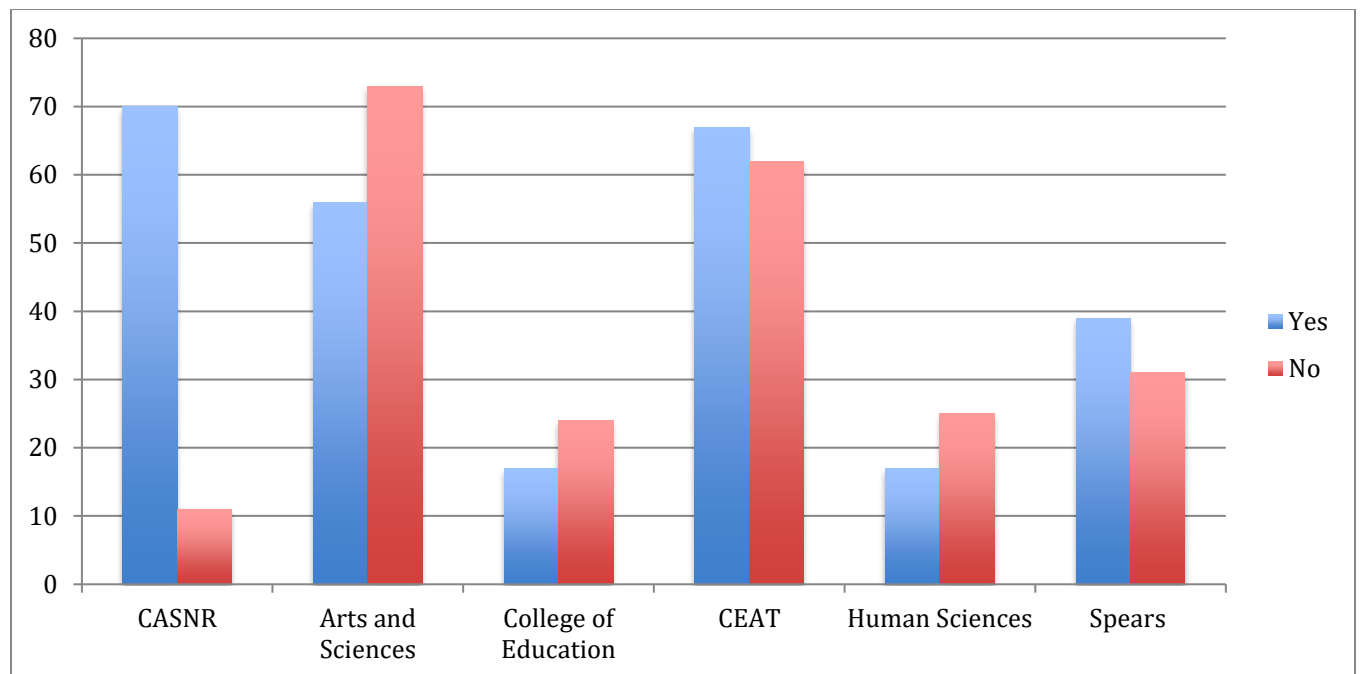
Question set four was designed to better understand participant’s understanding of how concern with animal welfare could impact the food they purchase regularly. It was also used to measure the level of understanding of how important agriculture is as well as how we could potentially reach them for information regard agriculture.

Findings and Conclusions Related to Objective Three

Objective three aimed to describe the relationships among participants’ selected demographics and perceptions of agricultural technologies in livestock production. This section will look specifically at how specific demographics contribute or surprisingly do not contribute to certain perceptions of the questions asked.

One of the questions students were asked was whether they have agricultural experience or not. Out of the participants 219 students (44.51%) claimed to not have any agricultural experience while 273 students (55.48%) did claim to have previous agricultural experience. The answers to this question broken down by academic college at OSU are found in Table 9.

Table 9: Distribution of Participant’s Agricultural Experience based on Academic College.



The primary agricultural experience was individuals who worked for an agricultural business (92.68%) and those who took agricultural courses in college (90.85%). It was surprising to find that of the 90.85% of those students who got their agricultural experience through a college course the majority of those were all students not enrolled in the College of Agricultural Sciences and Natural Resources.

Of the participants, 158 students (32.11%) graduated with more than 500 in their high school class. With most of those students now enrolled in the College of Engineering, Architecture and Technology (9.75%) and the College of Arts and Sciences (6.50%). In relation to this question participants were asked if their high school offered agricultural education or FFA classes. An overwhelming majority, 337 students (68.49%) did offer these types of courses. However, it is interesting to note 28 students (5.69%) did not know if their high school offered these types of classes. The majority of those individuals who were unaware of if their high school offered these classes came from Arts and Sciences, 9 students (1.89%), and CEAT, 10 students (2.03%), to make up part of the 28 students in this category.

The primary animal experience students from all six academic colleges was with cats (76.62%) and dogs (94.1%). However, experience with livestock animals, primarily sheep, goats, hogs, and cattle was significantly lower in all colleges except CASNR. Among all livestock animals CASNR students were mostly split evenly. The animal experience with the most variation among all six colleges was with horses and or mules.

The next sixteen questions of the survey asked about various aspects of the industry in a yes or no format. The answers were then related back to their academic colleges and if they had agricultural experience or not. Students who had agricultural experience previously and who were generally enrolled in CASNR had a more positive outlook on the technologies used regardless of word choice and other various aspects of the survey. However, there were many outliers that make for some interesting findings for this survey. The first interesting aspect being the answer to the first question: do you believe the quality of the U.S. food supply directly correlates with the well being of production animals. A majority of students who did have agricultural experience answered this question yes (44.22%) while those did not have agricultural experience actually also answered yes (34.48%). Typically it was expected to find a point where students with agricultural experience or enrolled in CASNR to be polar opposites.

The incredibly interesting but unsurprising results came from the set of questions addressing animal cognition and pain parallels with humans leading to conclusions about animal personification and thus welfare concerns. Participants were asked: do you believe production animals have the same cognitive ability to feel pain and discomfort as humans do. The majority, 419 students (85.16%), from all six colleges answered yes. As the trend has been for other questions in the survey, many students from CEAT (23.78%) as well as Arts and Sciences

(23.78%) answered yes to this question. Based on social media and current animal welfare concerns, this connection between animal and human cognition makes sense.

Many philosophers have theories about animals having a sense of self, meeting the subject-of-a-life requirements and inherently requiring equal treatment, considerations and rights as humans. The widely known Pavlovian conditioning experiment with the dogs and their food is often used as evidence of complex cognitive ability. Many have used this example as the center point for the argument showing animals have the same cognitive abilities as humans, thus saying they also feel pain and suffering in the same way humans do. However, there are other philosophers who believe animals are not even conscious of their actions but simply operate on their instincts. Regardless, people build these intimate relationships with their pets and transcribe their own personal experiences of stimuli onto these animals resulting in the answers seen in this questionnaire related to this topic.

Even the individuals who have agricultural experience agreed that animals have the same cognitive abilities as humans. Two hundred and twenty-four students (45.52%) who have agricultural experience and 195 students (39.63%) answered yes to this question. This number of students, 419 (85.16%), being much more than the majority of all participants in the study answering they believe humans and animals have similar cognitive abilities. This led directly into the next question: should production animals be treated similar to humans based on their cognitive abilities. The only college that did not answer overwhelming yes to this question was CASNR with 49 students (9.95%) answering no and 32 students (6.50%) answering yes. All other colleges had a simple majority of students who answered yes, 289 students (58.73%) total answering yes.

Though students believe humans and animals have similar cognitive abilities, they mostly answered no to the following question: do production animals have the same thinking and decision-making abilities as humans. Once again, all six colleges agreed, with 399 students (81.09%) answering no. The same was true in regards to agricultural experience as students who did have experience also agreed by answering no to this question.

The next set of questions addressed technologies adapted by animal producers that are currently under scrutiny from the public. Word choice was a big factor in how the questions were phrased and are meant to show how media has influenced perceptions of certain technologies used. When asked if participants believed chickens or raw eggs raised in cage-free or free-range environments provide more nutritious meat or eggs compared to conventional growing methods or laying houses, answers varied greatly between academic colleges. Students from CEAT and Spears School of Business were split almost evenly between those who answered yes (CEAT: 63, Spears: 40) and those who answered no (CEAT: 66, Spears: 30). While the colleges of A&S, Education and HS (27.23%) believed this to be true and CASNR (11.78%) did not.

When it came to gestation crates, all the colleges except for CASNR were split almost completely even. The question: do you believe housing pregnant sows (pigs) in crates for their protection from other pigs is humane? The key words being “crate” and “protection” are presumably the reason why the answers split almost completely even. Crate brings about the negative connotation while protection brings about the positive perception. In the same regard the question: if hormone-free milk were available on the market for a higher price than regular milk, would you consider purchasing it, was asked. This once again split the colleges almost entirely in half. CEAT, HS and Spears all had students answer almost fifty-fifty yes and no to this question.

However, 84 students (17.07%) from AS and 25 students (5.08%) from Education answered yes to this question while 62 students (12.6%) from CASNR answered no. The use of “hormone-free” and “regular” milk was used as a way to better understand once again how media shapes perceptions of agricultural products. As those in the industry know, all milk contains hormones so technically this question does not entirely make sense when participants do not have this particular knowledge. This is another example of how far removed consumers are from the farm and how little they actually understand of the science behind it all.

The participants were asked if they believed experts, the public or both should address animal welfare concerns. Three hundred and twenty-nine students (66.86%) from all six colleges agreed both parties should address these issues. It can be inferred had this question been asked 20 years ago the answer would have been primarily experts. This increased interest from the consumers contributes to the idea of involving those consumers in the decisions being made in regards to the production practices used to produce their food. A similar question: do you believe the government should be mandating the well being of production animals across the nation was asked. The role of government in these types of regulations has been minimal until recently when consumers began to question the practices. Three hundred and sixty students (73.17%) from all six colleges agreed the government should be involved in mandating animal welfare across the nation.

Final Conclusions

This survey was distributed in hopes of better understanding how participants perceive the agricultural industry, specifically technologies used in animal production. The average participant was 18 years old, female, Caucasian, with some type of agricultural experience, primarily working or in a college course. This is similar to what McKendree et al. (2014a) found,

that being those most concerned with animal welfare were young, females residing in the northern regions of the United States. Many of the participants had animal experience with those considered pets or companion animals, cats and dogs. The participants owning or raising these pets themselves is where most of this animal experience was gained. We presume this resulted in a majority of participants personifying these animals to the point that they believed these animals have the same cognitive abilities as humans and thus feel pain in the same way and to the same degrees as people. However, we really have no idea what the cognitive capabilities of animals

We can gather from these results this gap is increasing at an alarming rate and many consumers will also continue to invest their time and interest in animal welfare issues. The participants revealed a majority of the surveyed population has a good idea of the importance of animal welfare and the impact it will have on the food supply. However, there is a clear gap between those who understand the technological practices used and those who have been influenced by the media or other outside, unforeseeable sources.

Surprisingly, many students gained their agricultural experience through a college course, presumably at OSU but that cannot be confirmed nor denied through these results. The larger colleges of the six academic colleges identified by the students obviously had the most influence on the results of the survey. With those colleges being CEAT and A&S. The questions about the specific technological practices used were all almost split fifty between those who answered yes and those who answered no as was see in table 6. Traditionally, decisions about animals and agricultural practices were left up to the experts in those fields. As media has shed light on specific methods of production, the public has increased interest in having their opinions heard. This resulted in participants expressing both experts and the public be involved in addressing animal welfare concerns.

Once again the media and specific work choices of media and agriculturists alike have created a negative image of farmers and ranchers. This image stems from the ideas of “factory farms” and “corporate farming.” Factory farming is a term coined by the media to describe certain technologies used that make production facilities look like a factory and they very much are. However, this phrasing dehumanizes the entire process and leads consumers to believe the farmer sits in a corporate office and operates solely to raise his profit margins. The industry is not naïve enough to believe this does not exist in some capacity, but one bad apple can spoil the whole can for everyone. This is why some participants believed farmers to be more concerned with yields than with the welfare of their animals as indicated by table 7.

Recommendations

Agriculturalists already understand they need to be more vocal and open about what they are doing to raise crops and animals. However, this research intended to find what areas specifically needed to be addressed and begin the process of understanding how to best deliver this information. The surprising number of students who had taken a college course and learned about agriculture through this avenue suggests more emphasis should be placed on college education of consumers. I recommend starting a campaign to include information regard life-sustaining education in all freshmen orientation courses. This would need to be limited to the very basic necessities of life.

The final question of the survey was about using social media to find information about agricultural technologies. It was interesting to note 369 students (75%) answered no to this question while only 123 students (25%) answered yes. This was surprising since social media appears to be the driver of most controversial issues in agriculture and most debates related to animal agricultural technology. Only CASNR had the majority of students who used social

media as a resource for agricultural information, however, even this was only 46 students (9.34%). However, we can presume most of these students are not specifically using social media as a means to find information about agriculture. These students are most likely coming across the agricultural information by accident rather than specifically seeking it out. As Vance Crowe speaks about this makes it increasingly important to diversify our network and expand outside of those involved in agriculture.

My recommendation for this disseminating information to the social media users is to make a point for agriculturalists to consistently create and share agricultural information, specifically to those not involved in the industry. This should be integrated into agricultural education courses in high schools and colleges as well as presenting the opportunity to build new curriculum and contests in 4-H and FFA programs. This could serve as a springboard for educating young agriculturalists about their responsibility to serve as the voice for their industry, in addition to generating new and diverse interest in various agricultural programs. New students might be drawn to the idea of operating a social media campaign for an entity and generating interest and conversation in something they never knew about. This generation is the most technologically advanced, it is time to use this to our advantage and advance our agricultural programs using this as a platform.

My overall recommendation is to use the programs we already have in place to advocate for the industry to the consumers as well as humanizing the process. By adding the human element we connect consumers to the producers using emotions. This is how anti-agricultural organizations rally consumers against the industry. Using emotion is not a way to deceive consumers but a way to involve them in the conversation and show them the industry that feeds them has their best interest at heart. Farmers and ranchers need an avenue to be directly involved

in the conversation with consumers. This is where large food production and processing companies need to fill in. This can only be achieved if companies are willing to also get to know the producers behind their products. This could be a mutually beneficial relationship for everyone as it will shed positive light on the industry as well as the company.

Overall, the agricultural industry needs to get creative about how, where and when they will advocate. Based on the results of this survey, I find it would be most beneficial to start with students of all ages, from elementary school to those pursuing post-secondary education. The next generation of consumers and lawmakers will be here before we know it and if they don't support agriculture, the life as we, and they, know it will diminish quickly.

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