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An Assessment Of Animal Agricultural Producers Within North Carolina In Relation To Their Perceptions Regarding The Animal Agricultural Industry

Jessica Gowins
North Carolina Agricultural and Technical State University

An Assessment of Animal Agricultural Producers Within North Carolina in Relation to Their Perceptions Regarding the Animal Agricultural Industry

Jessica Gowins

North Carolina A&T State University

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Jessica Gowins

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Approved by:

Dr. Antoine J. Alston Major Professor	Dr. Chastity Warren English Committee Member
Dr. Tracy Hanner Committee Member	Dr. Anthony Yeboah Department Chairperson

Dr. Sanjiv Sarin
Associate Vice Chancellor of Research and
Graduate Dean

Dedication

I would like to dedicate this thesis to the person who inspired me. My grandfather, Leroy Gowins, introduced me to animals at a very young age. Historically, there are four generations of farmers in my family. The farm that is currently managed by my father is one of the few remaining farms in the state of North Carolina that is owned and operated by an African American. My love for animals stemmed from this introduction and sparked my personal desire to work with animals for the rest of my life. Through my grandfather's work and my father's work I understand the importance of continuing the legacy of animal agriculture.

Biographical Sketch

Jessica Virginia Gowins was born on July 18, 1988, in Durham, North Carolina. She is the daughter of Phillip Gowins and Carolyn Batts-Gowins and sister to Phillip A. Gowins. She is a United States Department of Agriculture (USDA) 1890 Scholar under the division of Animal and Plant Health Inspection Service. She was involved with the Student Government Association (SGA), Minorities in Agriculture, Natural Resources and other Related Sciences (MANRRS), Collegiate FFA, and the Pre-Vet Club at North Carolina A&T State University. She received the Bachelor of Science degree in Animal Science from North Carolina A&T State University in 2010.

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Abstract

The purpose of this study was to analyze the perceptions of North Carolina animal agricultural producers relative to the sociological, biological, and economic aspects of the animal agricultural industry. A survey instrument was used in this study to obtain perceptions as well as demographic information. The survey was distributed to producers at the producer meetings and randomly throughout the state. A one-week interval, three round data collection method was used. Convenient sampling was used to collect 88 surveys.

Producers agreed or strongly agreed that: people's perceptions of animal agricultural industry are affected by animal rights groups; the prevention and control of disease, herd or flock health management; and veterinary care are important to the animal agricultural industry; and it is cost expensive to maintain an animal agricultural facility. In relation to gender, there were statistically significant differences related to sociological and economic aspects of the animal agricultural industry.

Overall, it was found that the race/ethnicity of the producer had no effect perceptions. It was concluded that females were more sympathetic to animal rights and animal welfare and either need more financial supports or are more willing to accept financial supports than men. Recommendations included more literature done to address the perceptions of animal agricultural producers and more education for animal agricultural producers on possible funding avenues. This study shows how the sociological, biological, and economic aspects affect the animal agricultural industry and provides a snap shot relative to what animal producers must do to produce a quality product.

CHAPTER 1

Introduction

The global agricultural industry is supposed to meet the needs and demands necessary to sustain billions of people (Hawkins, 2010). In 2000, over 6 billion people were consuming 2,700 kcal per capital of food per day. With the ever growing population, that is expected to exceed 9 billion people in 2050, there is a constant challenge of providing enough agriculture to support the needs and livelihoods of the global population (Hawkins, 2010). There is 1.5 trillion hectares of land worldwide that is suitable to sustain agricultural growth. The production of animal protein accounts for 3.5 billion hectares of the world's agricultural land to meet the demands for meat throughout the world (Hawkins, 2010). The demand to produce on the 1.5 trillion hectares of land is increased for the production of feed for livestock. The need for greater crop production for the growing global population, an increased need for animal feed to meet the growing demand of animal protein, and biofuel production as an alternative fuel source has put more pressure on arable farmland that already contends with encroaching housing communities and climate changes (Hawkins, 2010)

According to the American Farm Bureau Federation, American consumers spend only 10% of their disposable income on food a year. Other countries, like China, Pakistan and Jordan spend more at 32%, 50%, and 43%, respectively. In 2008, the top five countries that imported the highest percent of their agriculture was Djibouti at 75%, Somalia at 65.37%, Kiribati at 59%, Afghanistan at 49%, and Guinea-Bissau at 41%. According to the Food and Agriculture Organization of the United Nations (2008), the five countries that imported the least amount of agriculture was Falkland Islands (Malvinas) at 0%, Norfolk Island at 0%, British Virgin Islands at 1 %, Equatorial Guinea at 2% and Bhutan at 2%. The United States was number 11 in the countries that import the least amount of agriculture at 3.8%. The country with the highest

percentage of exports was Guinea-Bissau at 98% and the country with the lowest percentage of exports was Falkland Islands (Malvinas), Guam, Norfolk Island, Tuvalu, British Virgin Islands and American Samoa at 2.45% percent.

Agricultural commodities are constantly exported and imported into countries to support the needs of the people. Some countries are known for being the leading producers of certain agricultural products and are the suppliers of these particular commodities for other countries. In the 2008, the Food and Agriculture Organization's Statistical Division (FAOSTAT), reported Mexico was the number two producer of lemons and limes, chilies and peppers, maize, indigenous horse meat and anise. According to the Food and Agriculture Organization (FAO) (2008), of the United Nations, the United States was the number one producer of soybeans, maize, grapefruit, strawberries, blueberries, indigenous cattle, turkey and chicken meat, maize, almonds, nuts, string beans, cranberries, and cow milk. Brazil was the number one producer of dry beans, sugar cane, oranges, pineapples, and coffee (FAO, 2008). China was recorded by the FAO in 2008, as being the number one producer of apples, fresh vegetables, wheat, sweet potatoes and potatoes, walnuts, cotton lint and cottonseed, tobacco, indigenous mule, horse, duck, sheep, goat and pig meat, rice, chilies, and tea. Nigeria was the number one producer of yams, karate nuts, melonseed, citrus fruit, cow peas, taro, cassava, and sorghum (FAO). Australia was the number one producer of wool and the number two producer of lupins, indigenous sheep meat, and chick peas (FAO). France, in 2008 was reported, by the Food and Agriculture Organization of the United Nations, as being the number one producer of barley, mixed grain, and sugar beet and the number two producer of string beans, indigenous duck and turkey meat, flax fibre, and tow. In 2008, Jamaica was number 14 for string beans, and number 16 for grapefruit, 17 for goat milk, yams, coconuts, pigeon peas, and tropical fruits (FAO).

For the purposes of this study animal agriculture will be the main focus. Livestock are animals raised and grown in captivity for the purpose of work or consumption and are used to make a profit. Livestock are not usually considered to be companion animals or pets. Livestock contributed to 40% of the global value of agricultural output and support the livelihoods and food security of almost a billion people (FAO, 2009). The global animal agricultural industry is growing economically, which has attributed to factors such as income growth and the support of technological advancement and structural change (FAO). According to the FAO in 2009, livestock contributed to 15% of total food energy and 25% of dietary protein, at the global level.

In 2009, the global animal agricultural industry produced 57,017 metric tons of beef and veal, 100,780 metric tons of pork, and 71,760 metric tons of poultry (FAO). The United States Census reported that in 2009 the world consumed 56,365 metric tons of beef and veal, 100,542 metric tons of pork and 71, 065 metric tons of poultry. The United States was the leading producer of both beef and veal, and poultry at 11,889 metric tons and 15,935 metric tons. According to the US Census Bureau, in 2009 the leading producer of pork was China at 48,890 metric tons. The United States was the leader in world consumption of both beef and veal, and poultry at 12,268 metric tons and 12,933 metric tons in 2009. China lead the world in the consumption of pork at 48,732 metric tons in 2009. There continues to be a rise in the production of agricultural commodities around the world. Global meat production is expected to double from 229 million tons in 1999/2001 to 465 million tons in 2050 and milk production is to increase from 580 to 1043 million tons (FAO, 2006).

Horse meat is consumed by the global population, 16% of the world's population eats horse meat (Lenz, 2010). The FAO in 2007 reported that the production of horse meat for human consumption world-wide was 1,040,450 tons (Lenz, 2010). The FAO reported that top

five countries for the production of horse meat were China, Mexico, Kazakhstan, the United States of American and Argentina. Consumers in the United States do not consume the meat of horses. Horse meat that is produced in the United States is generally exported to Europe and Asia (Lenz, 2010).

Americans consume a significant amount of the agricultural produce grown by farmers and ranchers. In 2009, according to the American Farm Bureau Federation, American's annual per capita consumption of major foods was: 217.4 pounds of rice, flour, and cereal products; 245 eggs; 202.3 pounds of meat; 32.7 pounds of cheese; 21 gallons of milk; 202.2 pounds of fresh vegetables; 86.7 pounds of fats and oils; and 126.2 pounds of fresh fruits. Despite the large quantities of agricultural commodities consumed by the American people, it is reported by the American Farm Bureau Federation that farmers and ranchers only receive 19 cents of every dollar spent on the food eaten in people's homes. This is a significant difference from the 31 cents out of a dollar received by farmers and ranchers in 1980.

Animal agriculture is a significant portion of U.S. agriculture. Related research, education and extension activities are continually changing to address new challenges and opportunities brought about by rapidly advancing technologies, evolving consumer demand, and the need to make positive contributions to environmental, human, and animal health (United States Department of Agriculture, National Institute of Food and Agriculture, 2009). Animal agriculture production varies all over the United States. The states have different levels of production for various types of the livestock. According to the Maryland Soy Bean Board in 2006, the top five states for livestock production were Texas, Iowa, Nebraska, California, and Kansas. The majority of Texas' animal agricultural industry in 2006 consisted of cattle at 69% and broiler chickens were 15% of the industry. Iowa in 2006 was the largest pork producing

state. Nebraska animal agricultural industry was 80% cattle and 14% swine. It was reported by the Maryland Soy Bean Board in 2006 that California's livestock production was predominantly dairy cattle at 70%. Kansas' 6.6 million cattle were able to generate 3 billion dollars which was accountable for 82% of the state's animal income for 2006.

Livestock production in the United States is more than just poultry, beef, and swine. Livestock producers in the United States grow many different types of livestock which adds to vitality of the animal agricultural industry. The National Agricultural Library of the United States Department of Agriculture reported in 2010 that approximately 6 million sheep were used for meat and wool production and 2.5 million goats were used for meat, milk, and mohair production. Aquaculture, which is the production of aquatic animals and plants, is an industry that is on the rise in the United States. The Economic Research Service of the United States Department of Agriculture (2009) reported that in the last two decades, the value of aquacultural production rose to nearly one billion dollars. According to the FAO (2008), globally the United States was ranked number nine for indigenous duck meat and number 20 for indigenous sheep meat. In 2007, the United States sold 6,540 emus, 177,812 geese, 5,697 ostriches, 10,876,586 pheasants, 1,294,163 pigeons, and 39,968.045 quail (United States Department of Agriculuture, 2007).

American animal agricultural industry cannot occur without the farmers, ranchers and farm hands to maintain and produce the livestock needed to feed the United States population. Farmers and ranchers must know how to properly handle and care for the livestock they chose to grow. Beef cattle when on pasture may need supplemental forms of feed, like hay and grain when grass is not growing sufficiently. Dairy cattle are significant for their production of milk and must be health checked twice a day during milking. Sows that are pregnant have to be

constantly monitored to ensure their safety as well as the safety of their piglets. In the care of poultry, every time a new flock enters an indoor facility, it must be cleaned and thoroughly disinfected. Horses have special attention paid to their mouths and hoofs. All types of livestock may also need veterinary care in maintaining herd health (American Farm Bureau Federation, 2009).

The agricultural industry is significant to the state of North Carolina. According to the North Carolina Department of Agriculture and Consumer Services in 2011, North Carolina's agricultural industry, including food, fiber and forestry, contributes $70 billion annually to the State's economy, and accounts for 18% of the state's income, and employs over 17% of the work force. According to the 2007 Census of Agriculture, there are 52,400 plus farms in North Carolina. These farms are located on 8.6 million acres of arable land (North Carolina Department of Agriculture and Consumer Service, 2011). The North Carolina Department of Agriculture and Consumer Service stated in 2011 that North Carolina produces more tobacco and sweet potatoes than any other state and ranks second in Christmas tree cash receipts, and the production of hogs and turkeys. Statistically, in 2009 North Carolina was a leading producer of all tobacco products, sweet potatoes, Christmas trees, processed cucumbers and fresh market strawberries (North Carolina Department of Agriculture and Consumer Services).

Animal agriculture is an ever evolving industry in North Carolina. North Carolina's Department of Agriculture and Consumer Services reported that in 2007 North Carolina livestock producers maintained 2,800 swine operations, 19,200 beef cattle operations, 460 dairy cow operations, and 1,300 sheep and lamb operations. The consistent production and management of livestock by North Carolina's livestock producers lead to North Carolina as the

number six ranked state for livestock production in 2006 by the Maryland Soy Bean Board's agricultural statistics. In 2006 the livestock industry in North Carolina created 66, 434 jobs.

North Carolina animal agricultural industry produces more turkey and swine than most other states. According to the 2009 Agricultural Statistics from North Carolina's Department of Agriculture and Consumer Services ranked North Carolina the second state in the production of hogs and pigs, trout sold (food size), and turkeys. In 2011, during the March 1 inventory, the N.C. Department of Agriculture and Consumer Services reported that North Carolina swine producers maintained 8,600 head of pigs and hogs. The value of hog and pig inventory for 2009 was $70 per head which lead to a total value of 679,000 dollars. In 2010, North Carolina agricultural producers sold 2,980 foodsize trout or larger sold and 3,600 pounds of trout sold at $1.61 per pound. The total value of sales in North Carolina in 2009 was 5,796 dollars (North Carolina Department of Agriculture and Consumer Services). In 2009, 35,500 turkeys and 1,089,850 pounds of turkey were grown by North Carolina producers. The price of turkey meat per pound was $0.48 and the value of production was 523,128 dollars in 2009 (North Carolina Department of Agriculture and Consumer Services).

Agriculture is the nation's largest employer, with more than 24 million people working in some phase (FFA, 2011). The agricultural industry is dynamic but faces many factors, particularly in the animal agriculture sector, that cannot be controlled by farmers and ranchers. These factors can include climate, supply and demand, land for farming and the trends presented by consumers. The impacts that affect the agricultural industry help shape the perceptions of the masses on a sociological, biological, and economical level.

Problem Statement

Agriculture plays a vital role in the United States' economy (Bureau of Labor Statistics, 2009). The future of the agricultural sector will be characterized by keywords as turbulence, globalization and networking, innovation, coping with uncertainties and risks and entrepreneurship (Alston, Cromartie, Warren-English, & Wakefield, 2009). America's farmers and ranchers provide food security for this nation and much of the rest of the world (American Farm Bureau Federation, 2009).

Farmers and ranchers in the United States produce significant amounts of agricultural commodities, but they face many issues. Farmers and ranchers also combat with social issues like animal welfare and animal rights, world hunger, and need to accommodate the needs of the different cultural backgrounds of consumers. Some of the biological issues faced by farmers and ranchers particularly in animal agriculture are disease, breeding and genetics, nutrition and diet, climate and environment, and health care. The increase in the prices of corn and soybean because of their use as alternative fuels, makes these animal feeds more expensive for farmers and ranchers to purchase for their livestock. There have been significant cuts in government financial aids for agriculture with the current state of the economy. Animal agriculture usually only receive aid that helps with the recovery of losses caused by natural disaster, *ad hoc aid*. The Farm Bill, plays a significant role in the economics of animal agriculture, most of the products of animal agriculture are not eligible for the price and income support programs that Congress has written into farm bills for major crops such as grains, cotton, and oilseeds (Congressional Research Service, 2008)

Animal agriculture is a major industry that is impacted by the social, biological, and economic perceptions of the masses. These perceptions have led to concerns like animal welfare

and the animal rights movement. People are becoming more concerned with where their food comes from and the methods of production used to grow these agricultural commodities. According to the United States Department of Agriculture's National Institute of Food and Agriculture, Americans buy approximately $100 billion of animal products at the farm gate and several times the amount at retail each year. With the amount of animal products consumed by Americans, it is important to understand who regulates the production and distribution of these animal productions.

Farmers and ranchers have to confront the needs and perceptions of the masses while maintaining production levels at their facilities. Farmers and ranchers feed the world and so it is important to understand their perceptions of the social, biological, and economic impacts on the animal agricultural industry. Once one understands the perceptions of these farmers and ranchers, it will be possible to gauge their education on the industry and level of care they feel should be provided to the livestock at their facilities.

Purpose of Study and Research Questions

Given the nature of today's global agriculture industry and the many factors that impact it from sociological, economic, and biological perspectives, it is imperative that the perceptions of animal agriculture producers are gauged in relation to the industry. With this in mind the purpose of this study was to gauge the perception of North Carolina's animal agriculture producers with regard to the sociological, economic, and biological aspects of the animal agricultural industry.

1. What were the demographic characteristics of North Carolina animal agricultural producers with respect to agribusiness enterprise?

2. What were the personal demographic characteristics of North Carolina animal agricultural producers?
3. What were the sociological perspectives of North Carolina animal agricultural producers with respect to the agricultural industry?
4. What were the biological perspectives of North Carolina animal agricultural producers with respect to the agricultural industry?
5. What were the economical perspectives of North Carolina animal agricultural producers with respect to the agricultural industry?

Significance of Study

Animal agriculture is imperative to the global agricultural industry. It is essential to the security and survival of the entire global population. Animal agricultural producers play a significant role in the protein products needed to supply the needs of billions of people. The animal agricultural producer is involved in the housing, handling, nutrition, health care, and general maintenance of these food animals. It is important to understand the needs, wants, and perceptions of the animal agricultural producers on their industry, especially when they are responsible for feeding the world's people.

North Carolina producers were surveyed in order to gauge their perceptions about the sociological, biological, and economic issues that affect their industry. The industry of agriculture is significant to the state of North Carolina, particularly animal agriculture. In 2009 North Carolina was ranked the number two producer, out of all states, of hogs and pigs, trout, and turkeys (North Carolina Department of Agriculture). North Carolina was also nationally ranked number five for broilers and catfish, number six for livestock, dairy and poultry cash receipts, and number 35 for the number of cattle on farms (North Carolina Department of

Agriculture, 2009). This study was used to better understand the perceptions of North Carolina animal agricultural producers. This study was an in-depth look at the sociological, biological and economical perceptions of these producers.

CHAPTER 2

Literature Review

Expertise-Oriented Approach/Theoretical Framework

This study used the Expertise-Oriented Approach as a theoretical framework. The Expertise-Oriented approach relies primarily on professional expertise to judge the quality of an institution, program, product or activity (Fitzpatrick, Sanders, & Worthen, 2011). Some professional judgment is involved in all evaluation approaches, but the expertise-oriented approach uses the reliance on professional expertise as the primary evaluation strategy. A professional or expert would be someone who can offer the most knowledge needed to evaluate the program, institution, or agency. Evaluation process for this approach can include, but are not limited to: doctoral examinations administered by a committee, proposal review panels, site institutions or individuals by state licensing agencies, peer reviews of articles submitted to professional journals, site visits of educational programs conducted at the behest of the program's sponsor, reviews and recommendations by prestigious blue-ribbon panels, or a critique form and ubiquitous expert who was an observer (Fitzpatrick, Sanders, & Worthen, 2011).

There are four types of Expertise-Oriented Evaluation approaches which include: Formal Review System, Informal Review System, Ad Hoc Review, and Ad Hoc Individual Review. Formal review systems use an existing structure, standards published by the organization responsible for accreditation, a specified schedule and opinions of multiple experts. Accreditation in the United States and in many other countries today meets the criteria for an expertise-oriented, formal review system (Fitzpatrick, Sanders, & Worthen, 2011).

Accreditation uses professionals and experts on the subject to provide judgment on the quality of what is being evaluated (Fitzpatrick, Sanders, & Worthen, 2011).

Informal review systems use an existing structure with a set of procedural guidelines and use the opinions of multiple experts. It rarely uses published standards and sometimes uses a specified schedule. Examples of an informal review are a graduate student's committee for dissertations, thesis, or capstone project and systems established for peer reviews of manuscripts submitted to professional periodicals (Fitzpatrick, Sanders, & Worthen, 2011).

Ad Hoc Panel Reviews only occur only at irregular intervals when evaluation is demanded. The panel is comprised of by experts that review subject matter that is related to no institutionalized structure for evaluation and uses no predetermined standards (Fitzpatrick, Sanders, & Worthen, 2011). Some examples of ad hoc review panels include panels organized in each state in the United States used to develop or revise educational standards for a state or school district, funding agencies to judge proposals and make recommendations for funding, and blue-ribbon panels appointed to address particular issues (Fitzpatrick, Sanders, & Worthen, 2011). Characteristics of these panel reviews are no routine schedule, but are organized by an agency or organization to receive input from experts on a particular issue (Fitzpatrick, Sanders, & Worthen, 2011).

Ad hoc individual reviews are another form of expertise-oriented evaluation. This type is a professional review of any entity by any individual selected for his or her expertise to judge the value of the entity and make recommendations for change or improvement (Fitzpatrick, Sanders, & Worthen, 2011). The work of hired consultants for businesses is an example of the use of the ad hoc individual review (Fitzpatrick, Sanders, & Worthen, 2011).

The expertise-oriented approaches to evaluation have emphasized the central role of expert judgment, experience, and human wisdom in the evaluative process and have focused attention on such important issues as whose standards (and what degree of transparency) should be used in rendering judgments about programs (Fitzpatrick, Sanders, & Worthen, 2011). This study relied on the input of North Carolina animal agricultural producers to provide their knowledge and opinions on the animal agricultural industry, specifically looking at their perceptions of the sociological, economic, and biological aspects of the industry. North Carolina animal agricultural producers are the experts on the industry because of their constant immersion and activity with livestock and the issues associated with the industry, because North Carolina animal agricultural producers are the experts, it is import gauge their opinions and perceptions in order to have a quality study.

Sectors of the Animal Agriculture Industry

In the global agricultural industry there are three types of development: developed, subsistence, and primitive. Some of the developed countries include the United States, Canada, Denmark, France, Australia, Greece, and South Africa. Developed countries have developed agriculture. Developed agriculture includes the following characteristics: a very small proportion of the total population on the farm actively engaged in farming, a highly specialized agriculture with each unit producing only one or two products, a highly mechanized agriculture with little or no animal or hand labor, a high per capita income and a high literacy for the total population (Damron, 2003).

Subsistence agriculture can be found in most developing countries that are outside of Africa. Subsistence agriculture includes the following characteristics: approximately one-half of the total population is engaged in farming, each farm family produces roughly what it consumes

with only a small surplus for sale or trade, little mechanization and much hand and animal labor, a relatively low per capita income, and a relatively low literacy rate (Damron, 2003). Primitive agriculture is found in the most undeveloped countries, some of the most primitive agriculture is found in Africa. The characteristics of primitive farming includes: almost the entire population involved in producing their own food since no one produces a surplus that can be purchased, generally a scarcity of food and a low nutritional level, no mechanization and very little animal power utilized in farming with almost all labor being hand labor, extremely low per capita income and very few literate individuals (Damron, 2003).

The global agricultural industry consists of different types of agricultural systems used to maintain their livestock. These systems are based on the level of agricultural development, climate, topography, and socioeconomic factors. In primitive agriculture, nomadic herding, shifting cultivation, and rudimentary sedentary tillage are used as agricultural systems. Nomadic herding is practiced in areas where there are mainly deserts, steppes, and savannas like those found in Africa, Arabia, and the interior of Eurasia. In nomadic herding, livestock is moved by farming families where feed and water are available for both family and herd. Shifting cultivation occurs when farmers use a small area of land and use it until the fertility declines. Once this occurs, the farmers move to another plot of land. This type of system is practiced in remote tropical areas of South America, Africa, Southeast Asia, and Indonesia. Rudimentary sedentary tillage system requires farmers to stay in one place where the land is very fertile (Damron, 2003).

In subsistence agriculture, intensive subsistence tillage and peasant grain, tuber, and livestock farming are the agricultural systems used. Intensive subsistence tillage is an agricultural system that is practiced in third world countries with a high human population.

Livestock is used for working purposes as well as a source of food. Peasant grain, tuber, and livestock farming is practiced in poor regions of Europe, cold regions of Asia, valleys of the Middle East, Africa and Latin America. Livestock is raised and utilized by the farmer and the family (Damron, 2003).

Developed agriculture uses ranching and commercial livestock and crop farming as the systems of agriculture. In ranching, livestock is the primary commodity of the farming industry. The livestock usually involved in ranching cattle, sheep, and occasionally goats. Ranching is the commercial use of the dry areas of the world (Damron, 2003). Ranchers try to produce a profit from the livestock raised on their farms. Most of the cattle ranches are found in the United States, Canada, tropical and subtropical Latin America, and the hotter parts of Australia. Most sheep ranches are located in Australia, New Zealand, South Africa, and Argentina (Damron, 2003). Commercial crop and livestock farming is a type of agricultural system that uses livestock as a secondary industry. Farmers in this type of system will either specialize in a specific type of livestock or be diversified and focus on two or more species of livestock. This type of livestock production is usually intensive. This type of production requires the animals to be confined and technology is mainly used to care for animals. There is minimal labor required and individual attention can be given to the animals (Damron, 2003).

Economic Aspects of the Animal Agriculture Industry

Animal agricultural producers put many resources into manufacturing a quality product. The key inputs of agricultural producers are feed, labor, and capital (both equipment and financial capital) (Dyck & Nelson, 2003). Feed cost depending upon the species can be more than half of the facilities budget. Labor costs can come from the actual farming, slaughter, process and distribution of meat for consumers and these costs can vary depending on the

alternative ways that workers can earn money in an economy (Dyck & Nelson, 2003). The costs of labor in developed countries has reduced by the use of machine based systems rather than people. The farms tend to intensive livestock facilities that still have the costs of housing, efficient feed and cleaning systems, environmental controls and monitoring systems (Dyck & Nelson, 2003). According to the American Farm Bureau Federation, farm expenses broke down as 18.5% of expenses was fertilizer, seed, crop-protecting chemicals, 15.6% of expenses was feed, 11.0% of expenses were miscellaneous, 9.8% of expenses was capital upkeep and replacement, 9.3% of expenses was farm labor, 8.6% of expenses was interest and property tax, 7.1% of expenses was fuel and electricity, 6.1% of expenses was purchased livestock, 5.3% of expenses was repairs and maintenance, 5.2 % of expenses was farm services and 3.5% of expenses was rent.

The off-farm costs (marketing expenses associated with processing, wholesaling, distributing and retailing of food products) accounts for 81 cents of every retail dollar spent on food (American Farm Bureau Federation, 2009). The 81 cents broken down includes: 38.5 cent for off-farm labor, 8 cents for packaging, 4 cents for transportation, 3.5 cents for energy, 4.5 cents is profits, 4 cents for advertising, 3.5 cents for depreciation, 4 cents for rent, 2.5 cents for interest, 1.5 cents for repairs, 3.5 cents for business taxes, and 3.5 cents for other costs. Farmers and ranchers receive only 19 cents out of every retail dollar spent on food that is eaten at home and away from home (American Farm Bureau Federation, 2009).

Trade is essential to the agricultural industry. Meat trade flows among countries and world regions are determined, in the absence of trade barriers, by differences among countries in their resource base for animal production and meat processing and by differences in their preferences in meat (Dyck & Nelson, 2003). The factors that influence meat trade are currency

exchange rates and the general macroeconomic, cultural, and political climate. The United States has taken measures to ensure trade with other countries. On January 1, 1994, the North American Free Trade Agreement (NAFTA) between the United States, Canada, and Mexico (Office of the United States Trade Representative, 2011). In 2010 the United States agricultural exports to NAFTA countries totaled $31.4 billion. The leading exports were red meats, fresh/chilled/frozen at $2.7 billion, coarse grains at $2.2 million, fresh fruit at $1.9 billion, snack foods (exluding nuts) at $1.8 billion, and fresh vegetables at $1.7 billion (Office of the United States Trade Representative, 2011). The United States agricultural imports from NAFTA countries totaled to $29.8 billion in 2010. The leading imports were fresh vegetables at $4.6 billion, snack foods including chocolate at $4.0 billion, fresh fruit excluding bananas at $2.4 billion, live animals at $2 billion and red meat, fresh/chilled/frozen at $2 billion (Office of the United States Trade Representative, 2011).

The United States has free trade agreements with Australia and Bahrain. The agreement with Australia was worth $18.9 billion exports and $7.8 billion in imports for the United States. The major agricultural exports in the agreement with Bahrain in 2003 were cotton, beef, chicken, snack foods, and other consumer products to serve the tourist industry (Office of the United States Trade Representative, 2011).

The Dominican Republic-Central American-United States Free Trade Agreement (CAFTA-DR) was signed between the United States and five Central American countries: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua as well as the Dominican Republic. The agreement eliminated tariffs, opened markets, reduced barriers of services, and promoted transparency (Office of the United States Trade Representative, 2011). The United States exports of agricultural products to the CAFTA-DR countries totaled $3.0 billion in 2009. The

top agricultural products exported by the United States in 2009 were coarse grains at $580 million, wheat at $397 million, soybean meal at $382 million, and rice at $223 million (Office of the United States Trade Representative, 2011). The United States imports of agricultural products from CAFTA/DR totaled to $3.6 billion in 2009. The leading agricultural products imported by the United States are bananas and plantains $831 million, coffee (unroasted) at $762 million, other fresh fruit at $630 million, raw beet and cane sugar $231 million, processed fruit and vegetables at $183 million and fresh vegetables at $180 million (Office of the United States Trade Representative, 2011).

The United States also has free trade agreements with Chile, Colombia, Israel, Jordan, Korea, Morocco, Oman, Panama, Peru and Singapore. The United States-Chile Free Trade Agreement in 2009 created United States exports to Chile at $8.8 billion and United States imports from Chile at $5.8 billion. The Colombia Trade Promotion Agreement allowed for $12.0 billion of the United States' goods to be exported to Colombia in 2010. In 2009, the free trade agreement between the United States and Israel produced $9.3 billion of exported goods for the United States and $18.3 billion of exports for Israel. The United States-Jordan Free Trade Agreement produced $1.2 billion worth of exports for the United States. The United States-Korea Free Trade Agreement will eliminate or phase out tariffs and quotas on a broad range of products, with almost two-thirds (by value) of Korea's agriculture imports from the United States becoming duty free upon entry into force (Office of the United States Trade Representative, 2011). In 2009 the trade agreement between the United States and Morocco produced $1.6 billion worth of exports for the United States and $461 million worth of exports for Morocco. The United States-Oman Free Trade Agreement was signed on January 1, 2009, and builds on existing free trade agreements to promote economic reform and openness (Office of the United

States Trade Representative, 2011). The trade agreement between Panama and the United States will include Panama eliminating duties on high-quality beef, frozen turkeys, sorghum, soybeans, soybean meal, crude soybean and corn oil, almost all fruit and fruit products, wheat, peanuts, whey, cotton, and many processed products (Office of the United States Trade Representative, 2011). The trade between the United States and Peru totaled at $8.8 billion in 2009, with the United States exports totaling at $4.8 billion. The two way trade between the United States and Singapore totaled $37 billion in 2009, with the United States exports at $21.6 billion and the United States imports at $15.4 billion (Office of the United States Trade Representative, 2011).

The United States Department of Agriculture's (USDA) 2008 budget for agriculture was $94.8 billion. Of those funds $2.3 billion went to Food Safety and Marketing and Inspection, $5 billion to Conservation Programs, $2.7 Research, Education and Economics, $4.5 billion on Risk Management, $6.2 million on Forest Service, $2.2 billion on Foreign Ag Service, $3 billion Rural Development, $13 billion on Farm Programs and $55.5 billion on Food Assistance and Nutrition Programs. Respectively farms programs accounted for only 13% of the United State Department of Agriculture's budget in 2008 (American Farm Bureau Federation, 2009). In 2010 the USDA's estimated budget was $133 billion. Approximately 80% of the 2010 budget, $105 billion, was dedicated to mandatory programs that provided services as required by law, which include: nutrition assistance programs, farm commodity programs, export promotion programs and conservation programs (United States Department of Agriculture, 2009). The remaining 20% of the budget, $28 billion, was dedicated with discretionary programs such as Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), rural development loans and grants, research and education, soil and water conservation technical assistance, animal and plant health, management of National Forests, wildland fire, and other Forest Service

activities, and domestic and international marketing assistance (United States Department of Agriculture, 2009).

Animal agriculture is significant to the economy of the United States. There is importance in understanding how price and markets can change, supply and demand and budgets. Economic conditions greatly affect the animal agricultural industry like any other form of business, therefore it is important for animal agricultural producers to understand the economic aspects of their industry.

Sociological Aspects of the Animal Agriculture Industry

Animal welfare and the rights of animals are major a concern for many people, particularly with livestock. This is only an issue in wealthy Western societies, not in less-fortunate countries (Damron, 2003). Animal welfare includes the avoidance of abuse and exploitation of animals by humans by maintaining appropriate standards of accommodation, feeding and general care, the prevention and treatment of disease and the assurance of freedom for harassment, and unnecessary discomfort and pain (Medical Dictionary). Animal activist groups like People for the Ethical Treatment of Animals (PETA) are concerned with issues like animal laboratory testing, animal abuse and cruelty, animal housing and transport, animal used for furs and inhumane slaughter.

Welfare issues associated with livestock deal with housing, transport, treatment, and slaughter. In the livestock industry pregnant sow housing is a major issue. Swine production is typically an intensive system in which pigs are crate housed. People are mostly concerned with the welfare of pregnant sows housed within these crates and the welfare of their piglets.

The United States Department of Agriculture has put together legislation to address welfare issues related to animals. The Animal Welfare Act passed in 1966, is used to protect

certain animal from inhumane treatment and neglect (Animal and Plant Health Inspection Service, United States Department of Agriculture, 2002). The Act was amended by Congress to strengthened it in 1970, 1976, 1985, and 1990. Animals that are regulated under the Animal Welfare Act are animals bred for commercial sale, used in research, transported commercially, or exhibited in public. Animals that are used for food and fiber, or other agricultural purposes and cold blooded animals are exempt from regulation under the Animal Welfare Act.

The Animal Welfare Act is enforced by the Animal and Plant Health Inspection Service (APHIS), an agency of the United States Department of Agriculture (USDA). APHIS ensures that all regulated commercial animal breeders, dealers, brokers, transportation companies, exhibitors, and research facilities are licensed or registered (Animal and Plant Health Inspection Service, United States Department of Agriculture, 2002). In order for these facilities to maintain their license, APHIS makes unannounced inspections at least once annually.

With the rise of livestock production there is still the problem of world hunger that will continue to grow as the global population grows in the future. The World Bank estimates that one hectare of land will need to feed five people in 2025 whereas in 1960 one hectare was required to feed only two+ people (CropLife International, 2009). The numbers of people who experience world hunger is constantly on the rise. In 2009, the FAO projects world hunger to reach a historic high with 1.02 billion people going hungry every day (CropLife International, 2009). The three main groups who are most at risk of hunger are the rural poor, the urban poor, and victims of catastrophes (FAO, 2011). The rural poor tend to produce their own food and tend to have no electricity and not safe drinking water (FAO, 2011). The urban poor are a group of people found in cities that produce little or no food and tend to lack means to buy their food

(FAO, 2011). Victims of catastrophes often experience starvation due to the destruction caused by natural disasters (FAO, 2011).

The majority of hungry people live in developing countries (FAO, 2011). There is a high concentration of people who experience hunger in Asia and the Pacific and the highest prevalence of hungry are in sub-Saharan Africa (FAO, 2011). According to the FAO (2010) Sub-Saharan Africa had 239 million hungry people, Asia and the Pacific had 578 million hungry people, Latin American and the Caribbean had 53 million hungry people, Near East and North Africa had 37 million hungry people and Developed countries had 19 million hungry people.

Religion is an issue that influences the animal agricultural industry. There are three religions in particular that affect the numbers and utilization of the world's livestock (Damron, 2003). These religions include are Islam, Judaism, and Hindu. Muslims practice the religion of Islam, which forbids the consumption and contact with swine. In countries that practice Islam, which are primarily located in North Africa and the Near East, swine are not present. Swine is also considered unclean in Judaism, as a result, there are few swine found in Israel. Cows are sacred in the Hindu religion and cannot be slaughtered or sold for slaughter (Damron, 2003)

Followers of Judaism must consume foods that satisfy the requirements of Jewish law or Kosher foods. Livestock that are considered Kosher are the animals that have cloven hooves and chews cud; Lev. 11:3; Deut. 14:6 (Rich, 2007). Cattle, sheep, goats, deer and bison are kosher, while camel, rock badger, the hare and pig are not kosher. The birds that are considered not kosher are birds of prey or scavengers. Chicken, geese, ducks and turkeys are considered to be kosher. Rodents, reptiles, amphibians, and insects are not kosher and are forbidden; Lev. 11:29-30, 42-43 (Rich, 2007). Any products derived from forbidden animals, such as their milk, eggs, fat or organs are not allowed for consumption (Rich, 2007).

There are people who do not believe in the consumption of meat and meat by-products in their diets. These people's choice not to consume animals or animal by-products has an affect the animal agricultural industry economically. Vegetarians are people who do not consume meat, poultry, fish, or seafood. This grouping includes vegans and the various sub-categories of vegetarian; however, it generally implies someone who has less dietary restrictions than a vegan. There are sem-vegetarians that vegetarians eat dairy products, eggs, chicken, and fish but no other forms of meat. Ovo-lacto-vegetarians are vegetarians who do not consume meat, poultry, fish, and seafood, but do consume eggs and milk. Ovo-vegetarians would be vegans but the consume eggs. Lacto-vegetarian are like vegans but they consume milk. Vegans do not consume any animal products or by-products, honey, yeast, or wear clothing made from animal products (VegetarianVegan, 2011).

There is a social concern in relation to livestock production's impact on the environment. According to the Food and Agriculture Organization (FAO) of the United Nations livestock production is one of the major causes of the world's most pressing environmental problems, including global warming, land degradation, air and water pollution, and biodiversity (FAO, 2006). With the growing consumer awareness and political pressure to push animal agriculture to more sustainable methods, animal agricultural producers are having to find ways to address their concerns will maintaining their current levels of productivity (FAO, 2006).

The social aspects associated with animal agriculture industry have an impact on the production of livestock. Consumers' culture, religion, and diets all have a way of dictating what the animal agricultural producers should raise in order to make a profit. It is important of animal agricultural producers to meet the needs of consumers to make a profit.

Biological Aspects of Animal Agriculture

The livestock industry is based on the health of the animal and the animal's genetics. To maintain the best product on their farms, farmers and ranchers are constantly concerned with the prevention and control of diseases on their farms. Livestock disease is a critical issue that can devastate an entire crop of animals and effect the economics of that farming facility. Disease is defined as alteration of the body or body organs which interrupts or disturbs the body's function (Berry, 2007). Diseases generally occur from a combination of two or more causes: indirect or predisposing factors that may lower an animal's resistance and the direct or determining factors that produce the disease itself (Berry, 2007). The direct causes of disease are bacteria, viruses, parasites, fungi, nutritional deficiencies, chemical poisons, and unknown causes. Dieses are classified in the following categories: Genetic (congenital and hereditary), Traumatic, Metabolic and nutritional, Neoplastic or cancerous and Infectious (Villarroel, 2009).

Diseases that are considered to be infectious, which is produced by living organisms, can be spread through various vehicles (Berry, 2007). The way that infectious diseases can be introduced into a herd are through the introduction of diseased animals, the introduction of carrier animals into a herd of healthy animals, contact with inanimate objects or carcasses, impure water, rodents and free-flying birds, mosquitoes, shoes and clothing from people from different farms, contaminated feed and feed bags, contaminated facilities (old litter and bedding, unsterile holding areas), and airborne organisms (Berry, 2007). Diseases must be avoided for livestock production to be successful. There are diseases that are specific to different livestock species.

Cattle have two types of types of diseases or organisms that cause sudden death. These are Clostridial diseases and Anthrax. Clostridial diseases include Blackleg, Malignant Edema,

Black's Disease, and Enterotoxemia and can cause sudden death in cattle when not monitored due to their small window for treatment. Cattle are also victim to Respiratory disease like Pasteurella, Reproductive diseases like Lepto, Scours and Pinkeye (Bagley, 1997).

Diseases in poultry can easily spread because of the industry's management system and volume of birds that can typically be in a house. The most common disease that affects poultry is respiratory diseases are, but are not limited to, Fowl Pox, Chlamydiosis, Avian Influenzaand Aspergillosis. Other diseases that affect poultry are Marek's Disease, Lymphoid leukosis, Avian encephalitis, and Egg Drop Syndrome (Butcher, Jacob, & Mather, 2009).

Goats and sheep have many diseases that they can be vaccinated against. Clostridial diseases, like Enterotoxemia type C and D and Tetanus, should be vaccinated against because of their high risks. Goat and sheep owners should also vaccinate their flock against Sore Mouth, Caseous Lymphadentitis, Chlamidia, and Rabies when these diseases are diagnosed or deemed high risk (Schoenian, 2007).

The most prevalent viral disease in swine is Pseudorabies, which has the ability to cause newborn pigs to die. When other animals, excluding humans, consumers meat from a pig that has Pseudorabies, they can suddenly die. Classical Swine Fever another viral disease that is highly contagious amongst swine. Swine Influenza is also a prevalent disease that has been in the spotlight for the last few years.

Horses also experience their own specific diseases. Some genetic diseases that horses can contract are Cerebellar ataxia, Lethal white foal syndrome, and Hereditary multiple exostosis. The United States Department of Agriculture is focusing on some particular diseases that are harmful to horse health. Some of these diseases are Contagious Equine Metritis, Equine

Herpes Virus, Equine Infectious Anemia, and Equine Viral Arteritis (EVA) (United States Department of Agriculture, 2011).

The aquaculture industry is also susceptible to disease. The shrimp industry has to cautious of a variety of viral diseases, particularly Taura syndrome. Taura syndrome is a virus that deforms and kills pond-reared shrimp (Damron, 2003). The United States Department of Agriculture (USDA) is focused on trying to regulate Viral Hemorrhagic Septicemia (VHS), Infectious Salmon Anemia (ISA), and Spring Viremia of Carp (USDA, 2011).

Livestock diseases are not just a biological aspect of the animal agricultural industry. Diseases can have a significant impact on the economic side of the animal agricultural industry. Diseased animals do not perform at their maximum ability, adding to the cost of production due to low returns (Villarroel, 2007). It is important for ranchers and farmers to determine which diseases are significant to their operation and vaccinate against them while maintaining a proper level of biosecurity.

Genetics and breeding are a significant part of producing a quality product in the animal agricultural industry. Genetics is associated with the heredity and the transmission and variation of genetic material inherited by offspring. The expression of an animal's genetic make-up or genotype sets the stage for disposition, coat type, coat color, speed, gait types, body composition, growth, reproduction, milk production, disease resistance and other traits (Damron, 2003). The genes expressed when an animal is produce determines an animal's worth in the current market. When producing an animal product, farmers and ranchers need to produce animals that meet the necessary genotype to meet the needs of the consumer and be a marketable enough for the farmer to make a profit (Damron, 2003).

Applied animal genetics in the selection of animals is usually referred to as animal breeding (Damron, 2003). Animal breeders try to make improvements in livestock and these improvements are then the standard that is to be represented in their selected animals. Breeders are aware of the significance of gene interaction when an animal is to be produced. Production animal breeders must incorporate an understanding of the principles of genetics into their production practices to make the necessary genetic changes within their herd (Damron, 2003).

Livestock are bred to have certain qualities or traits that have the most economic importance and meet the consumers' expectations. Beef cattle producers are concerned with mature size, calf growth, maternal performance, and carcass traits. Modern breeding requires selecting for a balance of production performance (such as rate of gain) and the end product merit (such as tenderness) to meet consumer expectations for eating satisfaction (Damron, 2003).

Dairy cattle producers are not just concerned with breeding for a cow with a high milk yield. Dairy producers are challenged to balance traits of economic importance in order to address some of the following goals: achieve profitable milk yield levels, monitor milk composition, generate profitable replacement animals that are productive under the stress of high production levels and sustain and improve cow longevity in the herd (Damron, 2003). The purpose of a dairy herd program is to produce replacement heifers that will: produce large volumes of mile with high protein, fat and total solids content, calve every 13 months with a minimum of problems, stay healthy and avoid or minimize disease problems such as mastitis, milk fever, ketosis, and so on, have excellent mobility and require minimal hoof care, have excellent dispositions and be easy to handle, milk out quickly, cleanly, and equally in all four quarters, and have excellent herd longevity (Damron, 2003).

Swine producers have the benefit of a high reproductive rate and short generation interval in swine that allows for rapid genetic progress for economically important traits (Damron, 2003). These producers look at the reproductive complex, growth rate and efficiency, and carcass traits to help determine the economic efficiency of their pigs. The body composition and carcass merit are important traits for producers as well as consumer eating experience (Damron, 2003).

Sheep producers are concerned with producing lamb and wool as efficiently as possible. The major areas of economic importance when it comes to breeding are lamb growth, prolificacy, and wool quality and quantity (Damron, 2003). Sheep are classified many ways but they are most commonly classified according to their function of the breed in the mating systems: ewe breed, dual-purpose breed, and ram breed. Ewe breeds are generally the fine-wool, white-faced breeds and those that were developed from crosses of the fine-wool breeds (Rambouillet, Merino) with the long-wool breeds (Lincoln, Border Leicester), or the highly prolific breeds (Finnsheep, Romanov) (Damron, 2003). Ram breeds are the meat-type breeds that are noted for their size, fast growth and carcass quality (Damron, 2003). Dual-purpose breeds are sheep that can be used as either a ewe breed or a ram breed, depending upon the environment and production goals of the operation (Damron, 2003).

Goats are generally seasonal breeders that come into heat and breed during the fall when days are shorter. Outcrossing and crossbreeding are two breeding systems used in goats that are used to improve goat herds genetically (Schoenian, 2006). When breeding goats it is important for producers to determine the purpose of their livestock to select the necessary traits. Goats can be breed for meat, milk or fiber (Damron, 2003).

Poultry farmers are most concerned with quantitative traits, which include: egg production potential, egg size, growth rate, conformation, and so on (Damron, 2003). There are

three ways that breeding and selection in the poultry industry differs from breeding in larger animals. The three major ways are: it is more flexible due to short generation intervals and large numbers of offspring; it has been the industry most subjected to modern animal breeding and selection techniques and has made the most progress; and fewer people make all the decisions (Damron, 2003). There are two types of bird: meat type and egg type. The most important traits in a laying hen breeding program are rearing mortality, laying mortality, age at 50% production, feed per weight of eggs produced, egg weight, percentage of large and extra large eggs, body weight, several egg quality measurements, and shell quality (Damron, 2003). Meat-producing breeding programs important traits are rate of growth, conformation, feed efficiency, structural soundness, disease resistance, and skin and feather color (Damron, 2003).

The application of genetic principles to aquaculture is no different than their application to any other species (Damron, 2003). Aquaculture producers use hybridization to produce hybrids of different species that have improved growth rates, better feed conversions, greater survival rates, greater disease resistance, and improved adult rates (Damron, 2003). There is a lack of efficient selective breeding programs in aquaculture partially due to the complexity of reproductive cycle (Gjedrem, 2005). There are still many challenges that must be address in the aquaculture industry.

Nutrition is defined as the study of how the body uses the nutrients in feed to sustain life and for productive purposes (Damron, 2003). It is important for livestock producers to understand the significance of nutrition in manufacturing a quality product with less cost. Depending on the type of enterprise, the cost of feed and feeding is 45-75% of the total cost of livestock production. Of the total costs of various enterprises, the portions attributed to feed include ranges of 65-80% for swine, 65% for broilers and turkeys, 50-60% for dairy cattle, 70%

for feedlot finishing of beef cattle, and 50% for feeding lambs (Damron, 2003). Nutrition's importance to the animal agriculture industry is that it affects general health and well-being, physical abilities, and susceptibility to and ability to recover from disease (Damron, 2003).

An animal's diet must have certain nutrients to meet their nutritional needs. The nutrient classifications are water, carbohydrates, vitamins, minerals, proteins, and fats or lipids (Damron, 2003). It is important for livestock producers to understand the nutrients found in feedstuffs in order to balance these nutrients to meet the needs of their livestock. Feeds are put into eight categories, which include: dry forages and roughages; pasture, range plants, and green forages; silages; energy feed; protein supplements; mineral supplements; vitamin supplements; and nonnutritive additives (Damron, 2003). The diet of different species of livestock varies to meet the needs of the animals.

Beef cattle are ruminants, which are more complex stomached animals that have more than one stomach compartments (Damron, 2003). Beef cattle are predominantly forage and roughage users. The nutrition of beef cattle is very dependent on the class of cattle to be fed and revolves around maximizing the use of forages as the base of economic production (Damron, 2003). A beef cow's priorities for nutrition are maintenance, lactation, growth (young females) and reproduction (Boyles).

Dairy cattle are also ruminants and are predominantly forages and roughage users like beef cattle. Higher quality forages are required for dairy cattle and dairy feeding has a greater dependence on concentrate feeds to supplement the forage (Damron, 2003). Dairy producers must formulate there rations according to whether the cow is lactating, dry, a calf, or a replacement heifer (Damron, 2003).

Swine are monogastric, or animals that have one stomach (Damron, 2003). Swine are predominantly feed grains, soybean meal, and high-quality, by-product feeds. Swine producers feed their livestock in a way that maximizes their growth during the different production stages. Managing the nutrition of swine is very dependent on the intended purpose of the animal (Damron, 2003). For example, animals that are intended for slaughter are fed differently from animals selected for the breeding herd.

Sheep are ruminants so they have the ability to use forages and roughages. The feed used in sheep and lamb production is the most expensive part of the industry (Damron, 2003). During grazing season, sheep are able to meet their nutrient needs from pasture and a salt and mineral supplement (Umberger, 2009). When forages are limited, hay is provided to the flock. Grain can be used to supplement during certain stages of production (Umberger, 2009).

Goats are classified as either meat or dairy. One of the values of goat meat production is that they can be produced without intensive feeding strategies or systems (Damron, 2003). This is because of the goats' ability to digest large quantities of fiber or roughage (Dwyer, 2009). Goats prefer to consume a variety of woody and weedy plant species mostly found on ranges (Dwyer, 20009). Additional feeds are only needed during droughts or in the winter. Dairy goats require a higher quality of feed to maintain milk production. Dairy goats should receive forages supplemented with commercially available dairy goat feeds.

Poultry are monogastric avian species. Poultry feeds consist of concentrated feeds such as grains, soybean meal, and high-quality by-product feeds. Rations are formulated using the least costing ration formulating programs. Poultry species are fed almost exclusively on complete mixed diets that are offered in mash or pelleted form (Damron, 2003).

Nutrition and nutritional management of the horse revolve around the fact that the horse is monogastric with a functional cecum (Damron, 2003). Horses are able to consume large amounts of forages. Different classes of horses should be fed diets relative to their class. The daily ration should consist of forage (hay or pasture) plus a concentrate (grain) mixture, as needed, depending on the size, condition, and function of the horse (Jurgens, 1997).

There are still many challenges in feeding aquatic species. The difficulty comes from the fact that many of the species are carnivores. Aquaculture producers, when formulating rations for aquatic species should give consideration to: the physical properties that must allow the species to be fed in water; nutrient stability to avoid water damage; particle stage appropriate to the species and life stage; feeding technique that avoids waste because waste affects water quality; the feed sources the species may take from its environment; the species' natural dietary habits (Damron, 2003).

Livestock are produced in various environments and climates. The environment an animal is raised in plays a role in its health, nutrition and feed, and genetics. Geographic location works together with the basic resources of feed, labor, and capital to help determine where livestock industries will flourish (Dyck & Nelson, 2003). There are particular environments that different species can be produced in. Livestock breeds were breed to make sure that they could withstand a particular climate and environment. The environment plays a role in breed and reproduction. Reproductive traits have low heritability, meaning the number of offspring produced is more influenced by environmental factors than it is by genetics (Schoenian, 2006).

A herd or flock health management program to manage the needs and health of the animals. These programs are designed to minimize potential adverse effects of predictable

problems and to protect against unexpected ones (Williams, 2011). General husbandry, nutritional management, parasite control, vaccination, and environment management must be a part of the health management program for it to be successful.

It is important for animal agricultural producers to understand the biological aspects of their livestock. Without breeding and genetics, health care and disease control, and herd and flock health programs it would not be possible for animal agricultural producers to raise a quality product. Understanding the needs of their livestock and maintaining their livestock keeps consumers healthy when the meat reaches the table or when consumers use animal agricultural products.

Statistical Overview of Animal Agriculture Industry

America's farmers and ranchers provide food security for this nation and much of the rest of the world. These farmers and ranchers are also the world's most productive. Today, each American farmer can produce food and fiber for 155 people in the United States and abroad (American Farm Bureau Federation, 2009). Farmers and ranchers in the United States produced 2,207,504,580,000 pounds of agricultural commodities in 2009, according to the American Farm Bureau Federation. In 2009, the American Farm Bureau Federation reported that American farms produced 881.8 billion pounds of grains (corn, wheat, oats, rice, barley, rye, sorghum and millet), 525.9 billion pounds of hay and silage, 189.7 billion pounds of dairy products, 138.0 billon pounds of horticulture (vegetables, citrus, non-citrus fruits and nuts), 122.3 billion pounds of cotton, tobacco, sugar beets, and sugar cane, 43.2 billion pounds of potatoes, sweet potatoes, coffee, ginger root, hops, peppermint oil, spearmint oil and taro, and 305.5 billion pounds of protein. The American Farm Bureau Federation stated that in 2009 that 56% of American agricultural commodities was crops. However, the farmers and ranchers in the United States

extend their productivity beyond crops and constantly seek to impact the world markets through the production of livestock. In 2009, the American Farm Bureau Federation reported that 44% of the commodities produced in The United States were livestock. This statistic includes the production of cattle, swine, sheep and goats, poultry and poultry products, and fish.

The US cattle inventory as of July 1, 2011 totaled to 100 million head. Of these cattle 40.6 million had calved. There are currently 31.4 million beef cattle and 9.2 million milk cattle. The classes of cattle include: 16 million heifers 500 pounds and over, 4.2 million beef replacement heifers, 4.2 milk replacement heifers, 7.6 million other heifers, 14.2 million steers weighing 500 pounds and over, 2 million bulls weighing 500 pounds and over, 27.2 million calves under 500 pounds, and 12.2 million cattle and calves on feed for slaughter. The 2011 calf crop is expected to be 35.5 million and calves born during the first half of the year are estimated at 25.8 million (United States Department of Agriculture, National Agricultural Statistics Service, 2011).

Cattle production was the most important agricultural industry to the United States in 2009, representing 43.8 billion in cash receipts. The modern production of beef in the United States is a highly specialized system that spans from cow-calf operations that typically graze pastureland to cattle feedlots focusing on finishing cattle on grain for slaughter (United States Department of Agriculture, National Agricultural Statistics Service, 2010). This industry is always in a state of change, with cattle being raised on fewer and larger farms (United States Department of Agriculture, National Agricultural Statistics Service, 2010).

In North Carolina, beef cattle are produced in all 100 counties. Cattle production faculties are most abundant in the Piedmont region and least abundant in the coast due to the lack of growing grass (North Carolina Department of Agriculture and Consumer Services, 2011). In

2010, North Carolina cattle producers farmed a total of 820,000 head of cattle. The leading five counties for cattle production are Iredell, Randolph, Chatham, Wilkes, and Duplin at a total of 173,000 head of cattle. The leading five counties for beef cattle production in 2010 were Chatham, Randolph, Duplin, Wilkes and Iredell. In 2010, the top five counties for dairy cattle production were Iredell, Randolph, Alleghany, Yadkin, and Alexander tied with Haywood with 2,000 head each. There were 367,000 beef cows and heifers that had calved in 2010 and 43,000 milk cow and heifers that calved in 2010. Cash receipts from cattle sales totaled to $213,812,000 and the gross income was $224,799,000 in 2009 (North Carolina Department of Agriculture and Consumer Services, 2010). The production of cattle in North Carolina and in the country is a viable industry and has provided jobs through farming revenue.

Within the United States, the swine industry is also significant to animal agriculture. The inventory for swine as of June 1, 2011 was 65.0 million head. The breeding inventory was 5.80 million head and the market hog inventory was 59.2 million head. Through the months of March and May the pig crop in the United States was 28.9 million head. The number of sows that farrowed during this period totaled 2.88 million head and the sows that farrowed during this quarter represented 50 percent of the breeding heard. The average pigs saved per litter was 10.03 for the March through May period. The pigs saved per litter by size of operation ranged from 7.50 for operations with 1-99 hogs and pigs to 10.10 for operations with more than 5,000 hogs and pigs (United States Department of Agriculture, National Agricultural Statistics Service, 2011).

The swine industry can be fragmented into five primary types of swine operations: feeder pig production, feeder pig finishing, farrow-to-finish operation, purebred or seedstock operations, and integrated corporate production. Feeder pig production is when the producer

maintains a breeding herd and produces weaned pigs for sale at 10-15 pounds or feeder pigs for sale at 35-50 pounds (Damron, 2003). Feeder pig finishing is when the feeder pigs are purchased and then fed to a market weight of 230-260 pounds (Damron, 2003). Farrow- to-finish operations pigs are breed to produce offspring that is fed to a market weight of 220-260 pounds, all of this is done on the same farm (Damron, 2003). Purebed or seedstock operations are similar to farrow-to-finish operations but their saleable product is primarily breeding boars and gilts or show pigs (Damron, 2003). Integrated corporate production can be farrow-to-finish and have their own seedstock production, with the different phases of operation located at different sites (Damron, 2003).

Swine production ranks number one in cash receipts in North Carolina out of all the other commodities (North Carolina Department of Agriculture and Consumer Services, 201l). Most hog farms are located in the eastern part of North Carolina, east of Raleigh, North Carolina. Eastern North Carolina has the climate and terrain that is exceptional for swine farms. In 2009 there were 9,600,000 head of swine on hog farms. The top five counties in 2009 were Duplin, Sampson, Bladen, Wayne, and Robeson at a total of 5,982,000 head of pigs. Swine producers had 930,000 head of breeding hog and 8,670,000 market hogs and pigs on their farms in 2009. The cash receipts for swine totaled to $1,877,798,000 and the gross income totaled to $1,878,989,000 in 2009 (North Carolina Department of Agriculture and Consumer Services, 2010). The climate and history of farming in North Carolina and in the country supports diversity and allows for the continued production of a variety of livestock.

The United States (U.S.) produces sheep and goats. The U.S. inventory of lamb and sheep on January 1, 2011 totaled to 5.53 million head. The breeding sheep inventory was on decline at 4.12 million head from 4.19 million head on January 1, 2010. On January 1, 2011

market sheep and lambs totaled 1.42 million head, with market lambs as 94 percent of the total marketings and market sheep was the remaining 6 percent of the total marketings. The 2010 lamb crop was 3.60 million head and the lambing rate was 108 lambs per 100 ewes one year and older. The number of sheep and lambs that were shorn in 2010 totaled 4.22 millon head, which produced 30.6 million pounds of wool. The average price paid for wool sold in 2010 was $1.15 per pound for a total value of 35.5 million dollars (United States Department of Agriculture, National Agricultural Statistics Service, 2011).

The United States inventory of all goats on January 1, 2011 totaled 3.00 million head. The breeding goat inventory totaled 2.49 million percent, does one year and older at 1.84 million head. Market goats and kids totaled 514,000 head. The kid crop for 2010 totaled at 1.91 million head. The meat and all other goats totaled to 2.47 million head. There was a total of 360,000 milk goats. There were 181,000 goats and kids clipped for mohair production, which resulted in 1.09 million pounds of mohair in 2010. The price of mohair in 2010 was $3.49 per pound with at total value of 3.79 million dollars (United States Department of Agriculture, National Agricultural Statistics Service, 2011).

North Carolina sheep producers had 25,000 head of sheep on their farms in 2010. Of these sheep 20,000 head were breeding sheep and lambs, 3,000 head were replacement lambs, 15,000 were ewes 1 year and older and 2,000 were rams 1 year and older. The total number of market sheep and lambs in 2010 were 5,000 head. The total number of goats produced on North Carolina farms totaled to 103,000 head in 2010. Milk goats constituted as 8,000 head and meat and other goats were 95,000 head in 2010 (North Carolina Department of Agriculture and Consumer Services, 2010).

The production of poultry and poultry products in the U.S. and within the state of North Carolina has produced significant numbers. The production of eggs alone, in the United States, totaled 7.50 billion during June 2011. This number included 6.44 billion table eggs and 1.07 billion hatching eggs, of which were 999 million broiler-type chickens and 69 million egg laying-type chickens. During June 2011 the total number of layers in the United States was 336 million which consisted of 279 million layers producing table or market eggs, 54.3 million layers producing broiler-type hatching eggs, and 2.83 million layers producing egg-type hatching eggs. There were 39.3 million egg-type chicks hatched and 768 million broiler-type chicks hatched during June 2011 (United States Department of Agriculture, National Agricultural Statistics Service, 2011).

The increase in technology and mastery of turkey breeding has lead to highly specialized operations (United States Department of Agriculture, National Agricultural Statistics Service, 2007). Turkey eggs are produced at laying facilities and then are shipped to hatcheries are placed in incubators. The hatched poults are then moved to a brooder barn. As the poults mature, they are moved to growout facilities until they meet slaughter weight so that they can be sent to be processed or sold as whole birds (United States Department of Agriculture, National Agricultural Statistics Service, 2007).

In 2010, 242 million turkeys were raised in the United States. The following six states accounted for nearly two-thirds of the turkeys produced in the United States during 2010: Minnesota at 47 million turkeys, North Carolina at 31 million turkeys, Arkansas at 28 million turkeys, Missouri at 17.5 million turkeys, Indiana at 16 million turkeys and Virginia at 15.5 million turkeys (United States Department of Agriculture, National Agricultural Statistics Service, 2011).

In North Carolina in 2009, the total number of layer chickens was 337,376,000 birds that laid a total of 90,359 million eggs. The average number of eggs laid annually per layer was 268 in 2009. These eggs were priced on average, per dozen, at $0.82. The value of production totaled $349,371,000 in 2009. The number of chickens sold by North Carolina producers in 2009 was 175,204,000. Pounds produced from these birds totaled to 759,600,000 pounds. The pounds of chickens sold totaled to 905,864,000 with an average price per pound at $252. The value of production in was $1,247,000. The top five counties in 2009 for chicken production were Hyde, Nash, Yadkin, Union, and Alexander. In North Carolina there were 759,600,000 commercial broilers produced in 2009. The value of commercial broiler production totaled to 2,429,960 thousand dollars. The top five counties for production of commercial broilers in 2009 were Union, Wilkes, Duplin, Robeson, and Randolph (North Carolina Department of Agriculture and Consumer Services, 2010).

Turkeys are produced in large amounts by North Carolina agricultural producers. Within the one hundred counties in North Carolina, it is estimated that five counties produced the most turkeys in 2009 according to the North Carolina Department of Agriculture and Consumer Services. The five counties were: Sampson at an estimated 10,419,000 head of turkeys; Duplin at an estimated 8,850,000 head of turkeys; Wayne with an estimated 3,204,000 head of turkey; Union at an estimated 2,998,000 head of turkey; and Onslow with an estimated 1,682,000 head of turkey. North Carolina turkey producer raised 35,500,000 turkeys, which produced 1,089,850 pounds of meat in 2009. The price per pound in 2009 was $0.50 and the value of production was $523,128,000 (North Carolina Department of Agriculture and Consumer Services, 2010).

Within the United States, the production and harvesting of fish is significant in three states. The three major catfish producing states by July 1, 2011 were Alabama, Arkansas, and

Mississippi with operations that totaled at 389. These states produced at total of 212 million food size fish. The breakouts of food size fish inventory numbers on July 1, 2011 were: 2.57 million large food size fish, 33.8 million medium food size fish, and 122 million small food size fish (United States Department of Agriculture, National Agricultural Statistics Service, 2011). The three major catfish producing states also had 430 thousand broodfish. On July 1, 2011, large stockers had 176 million catfish and small stockers had 173 million catfish. Producers had 732 fingerlings and fry.

Trout growers in the United States received a total of 71.3 million dollars for fish sales in 2010. Idaho accounted for 49 percent of the total fish sold (United States Department of Agriculture, National Agricultural Statistics Service, 2011). 38.7 million trout that were 12 inches and longer were sold in 2010. In 2009, the average price per pound was $1.39. The number of 6 to 12 inch trout sold during 2010 was 5.27 million fish and the average price per pound was $3.14. The total sales of 6 to 12 inch fish was 6.34 million dollars in 2010. The number of 1 to 6 inch trout sold during 2010 totaled 8.78 million fish, with total sales at 1.92 million dollars (United States Department of Agriculture, National Agricultural Statistics Service, 2011).

Intensive trout production begins with quality brood stock (United States Department of Agriculture, National Agricultural Statistics Service, 2009). Eggs from females are harvested are fertilized by male fish. The fertilized eggs are then transferred troughs for incubation and hatching. The fry are transferred to another tank once their yolk sac has been absorbed. The fry are grown into fingerlings and then to food size. During each life cycle the trout are moved to different tanks and require the necessary feed to meet their needs (United States Department of Agriculture, National Agricultural Statistics Service, 2009).

North Carolina catfish producers sold 3,120,000 fish in 2009. In 2009, there were 6,150,000 pounds of catfish sold at $0.74 per pound. The value of catfish sales was $5,166,000. Trout producers sold 3,400,000 fish in 2009. There were 3,750,000 pounds of trout which sold for $1.40 per pound. The value of trout sales in 2009 was $6,488,000 in 2009 (North Carolina Department of Agriculture and Consumer Services, 2010).

The animal agricultural industry is important to the United States' and global economy. Animal agricultural is a dynamic industry that continues to grow and change while maintaining quality products. When livestock and poultry are well cared for the result is a higher level of efficiency that lends to the highest quality and most affordable food in the world (Animal Agriculture Alliance, 2011).

Gender and Minority Perceptions of Animal Agriculture

The 2007 Census of Agriculture shows that women have a growing presence in the United States agriculture (United States Department of Agriculture, National Agricultural Statistics Service, 2007). Women in 2007 counted for 30.2 percent of the farms in the United States. According to the 2007 Census of Agriculture, female principal operators tended to have smaller operations and sales but they are more likely to own the farmland that they operate. The farms that women tend to operate are classified as "other livestock farms", like horse farms, or "all other crops", such as hay farms. Males tend to operate beef cattle operations and grain and oilseed farms.

Like farm operators overall, the majority of women farm operators are white (United States Department of Agriculture, National Agricultural Statistics Service, 2007). American Indian is the largest group of women minorities working in agriculture followed by women of Spanish, Hispanic, or Latin origin. The majority of these operations are located in the West and New England. According to the 2007, the states with the highest percentage of women principal

operators were Arizona, New Hampshire, Massachusetts, Maine, and Alaska (United States Department of Agriculture, National Agricultural Statistics Service, 2007).

Gender attitudes toward animal welfare tend to be different. A study conducted by Matthews and Herzog (1997) showed that women had generally a more positive attitude towards animals than men. Herzog (2007) later found that women were always more sympathetic to the treatment of animals than were men. It was also found in a study done by Knight, Vrij, Cherryman, and Numkoosing (2004), that the belief in the animal ability to think was consistently negatively associated with approval of the uses of animals across a variety of situations including experimentation, teaching and entertainment (Coleman, 2009). The results showed that females tended to be less supportive how these animals were used in these situations than men (Coleman, 2009).

The majority of the farming population is White or Caucasian. In 2007, 95.9 percent of principal operators reported being White and 2.5 percent reported being of Hispanic origin (United States Department of Agriculture, Economic Research Service, 2011). According to the 2007 Census of Agriculture, of the nonwhite principal farm operators, 38.4 percent were American Indian or Alaska Native, 33.8 percent were Black or African American, 13.9 percent were of more than one race, 12.4 percent were Asian, and 1.5 percent were Native Hawaiian or other Pacific Islander (United States Department of Agriculture, National Agricultural Statistics Service, 2007).

Farms that are operated by Black or African Americans, like farms operated by women, are generally smaller in acreage and sales (United States Department of Agriculture, Economic Research Service, 1998). In 1998, it was reported that farms operated by African Americans were declining at a faster rate than United States farms in general, while the farms operated by

women or other minorities were stable or increasing. Farms operated by Asians and Pacific Islander typically specialized more in fruits, vegetables and horticultural products and more than doubled the average of the sales of all United States farms in 1998. American Indian operations and Black operations tended to specialize in livestock, particularly beef cattle.

It is believed by the Economic Research Service that the reason for the decline in African American operations because of agriculture's shirt from labor-intensive to a capital-intensive enterprise. African American operators felt the agricultural shift harder because of the effects of their social and economic position in the South has prevented the Black community from obtaining land to take advantage of the cost-saving agricultural innovations (United States Department of Agriculture, Economic Research Service, 1998). Due to the limited access to information needed to protect their operations, African Americans are less likely to be able to maintain their land. These factors have deterred younger African Americans from participating in the agricultural industry (United States Department of Agriculture, Economic Research Service, 1998).

Gender and minority perceptions have an impact upon the animal agricultural industry. It is important to acknowledge the strong presence of women and minorities in agriculture and their contribution to the animal agricultural industry. The perceptions of women and minorities are impacted by their sociological and economic experiences, which will influence their participation in the industry.

CHAPTER 3

Methodology

Population of the Study

The population for this study consisted of all North Carolina animal agricultural from the North Carolina State Farm Bureau Convention, Chatham County and North Carolina Animal Agriculture Commodity Groups.

Instrumentation

The survey for this study consisted of five sections: Part I. Sociological Aspects of the Animal Agricultural Industry, Part II. Biological Aspects of the Animal Agricultural Industry, Part III. Economic Aspects of the Animal Agricultural Industry, Part IV. Animal Agricultural Operations Demographics, and Part V. Demographics of Animal Agricultural Producers. Parts I – III consisted of Likert-type items and Parts IV – V consisted of open-ended and multiple choice items. Parts I – III consisted of ten question that utilized a five-point Likert-type scale with the following response : 1=Strongly Disagree, 2=Disagree, 3=Uncertain, 4=Agree, and 5=Strongly Agree.

The validity of the instrument was established by means of content and face validity. Brown (1983) defined content validity as "the degree to which items on a test representatively sample the underlying content domain" (p. 487). Brown recommended using expert judges as one means of establishing content validity. A panel of experts at North Carolina Agricultural and Technical State University consisting of the researcher's graduate thesis committee will review the survey instrument for content validity. The instrument was judged to be valid in order to accomplish the specific purpose of study. In order to establish the reliability of the revised instrument a pilot study was conducted on animal agricultural producers in Chatham County,

North Carolina. The Cronbach's alpha reliability coefficients for the sections of the survey were Part I: .44, Part II: .71, and Part III:.66.

Data Collection

In relation to data collection a one week-interval, three-round data collection method was used following the conventions established by Dillman, Smith, Christian (2009) for email surveys. The first round consisted of respondents receiving an email discussing the survey and the link to the survey itself. The second round consisted of respondents receiving a reminder email about the survey. The third round consisted of follow up phone calls to the non-respondents.

Data collection was done with the use of a convenient sample. A convenient sample of North Carolina Animal Agriculture Producers was taken from the North Carolina's State Farm Bureau Convention and local producers in Chatham County, North Carolina. Convenience sampling, also referred to as accidental or haphazard sampling, is the process of including whoever happens to be available at the time (Gay, Mills, & Airasian, 2011).

Data Analysis

The data was collected from North Carolina animal agriculture was coded, entered, and analyzed using the researcher's personal computer. Specific statistical measurements were used for this study include means, frequencies, and standard deviations. The Data was analyzed using the Statistical Package for Social Science (SPSS), Personal Computer Version 19.0. In order to control for non-response error, Miller and Smith (1983) recommended comparing early to late respondents. Early respondents were those who respond as first and late respondents were operationalized as respondents after the first respondents.

Limitations

The study was limited to North Carolina animal agricultural producers. Participants were from select agricultural commodity group meetings and select counties in North Carolina. It was assumed that respondents answered the survey truthfully. An increased number of survey participants could have provided a better scope to compare the sociological, biological, and economic aspects relative to gender perceptions and race/ethnicity perceptions.

CHAPTER 4

Findings and Discussion

Chapter four presents the data collected from the survey instrument in relation to the objectives of this study. The purpose of this study was to analyze the perceptions of North Carolina animal agriculture producers in relation to the sociological, economic, and biological aspects of the animal agricultural industry. In order to accomplish the aforementioned purpose of this study, the following research questions were developed:

1. What were the demographic characteristics of North Carolina animal agricultural producers with respect to their agribusiness enterprise?
2. What were the personal demographic characteristics of North Carolina animal agricultural producers?
3. What were the sociological perspectives of North Carolina animal agricultural producers with respect to the agricultural industry?
4. What were the biological perspectives of North Carolina animal agricultural producers with respect to the agricultural industry?
5. What were the economic perspectives of North Carolina animal agricultural producers with the respect to the agricultural industry?

Research Question One and Discussion

In the first research question of this study, North Carolina animal agricultural producers' demographics characteristics with respect to their operations were gauged. Table 1 addresses the demographic breakdown of the animal agricultural operations.

Table 1 displays the frequencies and percentages regarding the demographics of the animal agricultural producers' operations. In relation to the animal agricultural operations, the

majority of the operations were 200 acres or more with approximate 1 to 49 livestock. Overall, producers raised beef cattle on their facilities that tended to be more outdoor/pasture based.

Table 1

Animal Agriculture Operations Demographics

Operations Demographics	Frequency	Percentage
1. How large is your agricultural operation?		
1-49 Acres	16	18.2%
50-99 Acres	15	17.0%
100-150 Acres	24	27.3%
200 Acres or more	33	37.5%
2. What livestock species are raised on your agricultural operation?		
Aquaculture	1	1.1%
Beef Cattle	63	71.6%
Dairy Cattle	10	11.4%
Goats	17	19.3%
Horses	14	15.9%
Poultry	22	25.0%
Sheep	5	5.7%
Swine	20	22.7%
3. How many labors work at your animal agricultural facility?		
0-10	85	96.6%
11-20	2	2.3%
21-30	0	0.0%
31-40	0	0.0%
41-50	0	0.0%
50 or more	1	1.1%
4. Approximately how many livestock are on the agricultural operation?		
1-49	28	31.8%
50-99	23	26.1%
100-150	16	18.2%
200 or more	21	23.9%
5. Is your agricultural facility more intensive and indoor, pasture based and outside or both?		
Intensive/Indoor	16	18.2%
Outside/Pasture	57	64.8%
Both	15	17.0%

Research Question Two and Discussion

North Carolina animal agricultural producers were asked questions about their demographics. Table 2 displays the frequencies and percentages regarding animal agricultural

producers' demographics. The majority of the producers were white males over the age of 56. Most producers had received a Bachelors degree, a High School Diploma, or a Masters Degree, respectively. With respect to years of experience, most producers had 50 or more years of experience.

Table 2

Animal Agriculture Producers' Demographics

Producers' Demographics	N	Percentage
1. Age		
18-25	3	3.4%
26-35	6	6.8%
36-45	9	10.2%
46-55	17	19.3%
56 or older	53	60.2%
2. Gender:		
Male	68	77.3%
Female	20	22.7%
3. Race/Ethnicity		
Asian	0	0.0%
Black	9	10.2%
Hispanic	0	0.0%
Native American	1	1.1%
White	78	88.6%
Other	0	0.0%
4. Highest form of education obtained:		
High School Diploma	29	33.0%
Associate's Degree	5	5.7%
Bachelor's Degree	40	45.5%
Master's Degree	8	9.1%
Specialist Degree	4	4.5%
Doctorate Degree	2	2.3%
5. How many years have you participated in the animal agricultural industry?		
1-10	7	8.0%
11-20	14	15.9%
21-30	16	18.2%
31-40	12	13.6%
41-50	14	15.9%
50 or more	25	28.4%

Table 2 (Cont.)

Animal Agriculture Producers' Demographics

Producers' Demographics	N	Percentage
6. What livestock are you most familiar with?		
Aquaculture	2	
Beef Cattle	68	
Dairy Cattle	18	
Goats	18	
Horses	20	
Poultry	25	
Sheep	9	
Swine	30	
7. Where did you get your animal agriculture experience?		
Agriculture Related Organization		
Family Farm	35	
High School Agriculture Program	82	
Veterinarian Office	32	
Volunteer on a Farm or Livestock Facility	7	
Worked on a Farm	6	
Other	39	
8. Are you affiliated with any agricultural organizations, council, ect?	12	
Aquaculture Commodity Group		
Beef Cattle Commodity Group	1	
Dairy Cattle Commodity Group	40	
Goats Commodity Group	6	
Horse Commodity Group	10	
Poultry Commodity Group	5	
Sheep Commodity Group	8	
Swine Commodity Group	3	
Farm Bureau	7	
The Grange	72	
Other	3	
9. When you have an issue with regards to your animal agriculture operation, where do you obtain your information to address these issues?	5	
Cooperative Extension		
Private Industry Experts	76	
University Specialist	28	
Internet Based Sources	35	
Veterinarians	26	
Local Markets, Feed Stores, Stockyards, ect.	61	
Television, Radio, Local Newspaper	36	
Other	17	
	14	

Research Question Three and Discussion

In the third research question of this study, animal agricultural producers were asked to share their views on the sociological aspects of the animal agricultural industry. Table 3 displays the means and standard deviations (SD) regarding their perceptions on the sociological aspects of the animal agricultural industry. For the purpose of this data analysis, readers should utilize the following specification when interpreting the results for Table 3: 1.00-1.49=Strongly Disagree, 1.50-2.49=Disagree, 2.50-3.49=Undecided, 3.50-4.49=Agree and 4.50-5.00=Strongly Agree. Participants agreed that people's perceptions of the animal agriculture industry are affected by animal rights groups. In relation to world hunger, animal agriculture producers agreed that they have a responsibility to rid the world of world hunger. Producers agreed that cultural and religious factors and consumer trends influence the sale of animal agricultural products.

Table 3

Sociological Aspects of the Animal Agriculture Industry

Sociological Aspects of the Animal Agriculture Industry	Mean	SD
1. People's perceptions of the animal agriculture industry are affected by animal rights groups.	4.28	.757
2. Livestock should be regulated under the Animal Welfare Act.	2.47	1.241
3. Animal agriculture producers and the animal agriculture industry have a responsibility to play an essential role in ridding the world of hunger.	4.09	.905
4. Cultural and religious factors and consumer trends influence the sale of animal agricultural products.	4.18	.736
5. Consumer concerns with organic foods puts pressure on animal agriculture producers to produce organic meat and animal products.	3.77	.881
6. The animal agricultural industry does have a significant impact on the environment.	3.74	1.077

Note. Scale: 1=Strongly Disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree

The researcher tabulated the perceived views of the sociological aspects of the animal agriculture industry based upon the gender of respondents. Table 4 displays results by gender.

In regards to question one, there was a statistically significant difference by gender. Females strongly agreed that people's perceptions of the animal agriculture industry are affected by animal rights groups. There was also a statistically significant difference in responses by gender in question two. Females somewhat agreed while males disagreed that livestock should be regulated under the Animal Welfare Act. Question five showed statistical significance. Females agreed that consumer concerns with organic foods puts pressure on the animal agriculture producer while males somewhat agreed.

Table 4

Perceived Views on Sociological Aspects by Gender

Gender Perceptions	Gender	Mean	t	p
1. People's perceptions of the animal agriculture industry are affected by animal rights groups.	Male	4.19	-2.167	***.033**
	Female	4.60		
2. Livestock should be regulated under the Animal Welfare Act.	Male	2.34	-1.803	***.075**
	Female	2.90		
3. Animal agriculture producers and the animal agriculture industry have a responsibility to play in ridding the world of hunger.	Male	4.06	-.611	.543
	Female	4.20		
4. Cultural and religious factors and consumer trends influence the sale of animal agricultural products.	Male	4.12	-1.520	.132
	Female	4.40		
5. Consumer concerns with organic foods puts pressure on animal agriculture producers to produce organic meat and animal products.	Male	3.68	-1.920	***.058**
	Female	4.10		
6. The animal agricultural industry does have a significant impact on the environment.	Male	3.69	-.760	.449
	Female	3.90		

Note. Scale: 0=Neutral, 1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Agree, 5=Strongly Agree, *Note.* *p <0.05= statistically significant difference

The researcher tabulated the perceived views of the sociological aspects of the animal agriculture industry based upon the race/ethnicity of respondents. Table 5 presented the results

of by race/ethnicity. With regards to race/ethnicity, no statistically significant differences were found.

Table 5

Perceived Views on Sociological Aspects by Race/Ethnicity

Race/Ethnicity Perceptions	Race	Mean	t	p
1. People's perceptions of the animal agriculture industry are affected by animal rights groups.	White	4.31	.815	.417
	Minority	4.10		
2. Livestock should be regulated under the Animal Welfare Act.	White	2.41	-1.178	.242
	Minority	2.90		
3. Animal agriculture producers and the animal agriculture industry have a responsibility to play in ridding the world of hunger.	White	4.13	1.081	.283
	Minority	3.80		
4. Cultural and religious factors and consumer trends influence the sale of animal agricultural products.	White	4.18	-.083	.934
	Minority	4.20		
5. Consumer concerns with organic foods puts pressure on animal agriculture producers to produce organic meat and animal products.	White	3.77	-.103	.918
	Minority	3.80		
6. The animal agricultural industry does have a significant impact on the environment.	White	3.71	-.813	.419
	Minority	4.00		

Note. Scale: 0=Neutral, 1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Agree, 5=Strongly Agree, *Note.* *p <0.05= statistically significant difference

Research Question Four and Discussion

In the fourth research question of this study, animal agriculture producers were asked to share their views on the biological aspects of the animal agriculture industry. Table 6 displays the means and standard deviations (SD) regarding their perceptions of the biological aspects of the animal agricultural industry. For the purpose of this data analysis, readers should utilize the following specification when interpreting the results of Table 6: 1.00-1.49=Strongly Disagree, 1.50-2.49=Disagree, 2.50-3.49=Undecided, 3.50-4.49=Agree and 4.50-5.00=Strongly Agree.

In reference to the biological aspects of the animal agriculture industry, the majority of producers agreed that genetics and breeding were a significant part of producing a quality product. It was strongly agreed upon that proper nutrition is important to the animal agricultural industry. The majority of these producers strongly agreed that that the prevention and control of diseases, herd or flock health management, and veterinary care are important to the animal agricultural industry.

Table 6

Biological Aspects of the Animal Agriculture Industry

Biological Aspects of the Animal Agriculture Industry	Mean	SD
1. The prevention and control of diseases, herd or flock health management, and veterinary care are important to the animal agricultural industry.	4.59	.494
2. Genetics and breeding are a significant part of producing a quality product in the animal agricultural industry.	4.45	.623
3. Housing structures and feedlots have a great impact on growth rate and health.	4.10	.858
4. Proper nutrition is important to the animal agricultural industry.	4.55	.523
5. Geographic factors (climate, weather, and land) work with nutrition, labor and capital to determine where livestock industries will be successful.	4.14	.761

Note. Scale: 1=Strongly Disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree

The researcher tabulated the perceived views of the biological aspects of the animal agriculture industry based upon the gender of respondents. Table 7 displays the results by gender. No statistically significant differences were found by gender.

Table 7

Perceived Views on Biological Aspects by Gender

Gender Perceptions	Gender	Mean	t	p
1. The prevention and control of diseases, herd or flock health management, and veterinary care are important to the animal agricultural industry	Male	4.56	-1.124	.264
	Female	4.70		

Table 7 (Cont.)

Perceived Views on Biological Aspects by Gender

Gender Perceptions	Gender	Mean	t	p
2. Genetics and breeding are a significant part of producing a quality product in the animal agricultural industry.	Male	4.44	-.369	.713
	Female	4.50		
3. Housing structures and feedlots have a great impact on growth rate and health.	Male	4.06	-.577	.565
	Female	4.20		
4. Proper nutrition is important to the animal agricultural industry.	Male	4.12	-1.017	.312
	Female	4.40		
5. Geographic factors (climate, weather, and land) work with nutrition, labor, and capital to determine success.	Male	4.12	-.423	.673
	Female	4.20		

Note. Scale: 0=Neutral, 1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Agree, 5=Strongly Agree, *Note.* *p <0.05= statistically significant difference

The researcher tabulated the perceived views of the biological aspects of the animal agriculture industry based upon the race/ethnicity of respondents. Table 8 results by race/ethnicity. With regards to race/ethnicity, there were no statistically significant differences found.

Table 8

Perceived Views on Biological Aspects by Race/Ethnicity

Race/Ethnicity Perceptions	Race	Mean	t	p
1. The prevention and control of diseases, herd or flock health management, and veterinary care are important to the animal agricultural industry	White	4.59	-0.61	.951
	Minority	4.60		
2. Genetics and breeding are a significant part of producing a quality product in the animal agricultural industry.	White	4.49	1.378	.172
	Minority	4.20		

Table 8 (Cont.)

Perceived Views on Biological Aspects of Race/Ethnicity

Race/Ethnicity Perceptions	Race	Mean	t	p
3. Housing structures and feedlots have a great impact on growth rate and health.	White	4.06	.398	.691
	Minority	4.20		
4. Proper nutrition is important to the animal agricultural industry.	White	4.12	.290	.772
	Minority	4.40		
5. Geographic factors (climate, weather, and land) work with nutrition, labor, and capital to determine success.	White	4.12	1.495	.138
	Minority	4.20		

Scale: 0=Neutral, 1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Agree, 5=Strongly Agree, Note, *p <0.05= statistically significant difference

Research Question Five and Discussion

In the fifth research question of this study, animal agriculture producers were asked to share their views on the economic aspects of the animal agriculture industry. Table 9 displays the means and standard deviations (SD) regarding their perceptions of the economic aspects of the animal agricultural industry. For the purpose of this data analysis, readers should utilize the following specification when interpreting the results for Table 9: 1.00-1.49=Strongly Disagree, 1.50-2.49=Disagree, 2.50-3.49=Undecided, 3.50-4.49=Agree and 4.50-5.00=Strongly Agree.

In relation to the economic aspects of the animal agricultural industry, most producers agreed that the current economy has had an effect on the prices of animal agriculture products and that it is expensive to maintain an animal agricultural facility. Most agreed that trends in supply and demand, based on consumer preferences, impact them. Animal agricultural producers strongly agreed that animal agriculture is a major part of the United States' and North Carolina's economy.

Table 9

Economic Aspects of the Animal Agriculture Industry

Economic Aspects of the Animal Agriculture Industry	Mean	SD
1. Animal agriculture is a major part of the United States' economy and North Carolina's economy.	4.68	.468
2. Government assistance and funding is important to animal agricultural producers.	3.82	1.067
3. Feed is the greatest cost for animal agricultural producers.	4.14	.833
4. The current economy has an effect on prices of animal agriculture products.	4.23	.739
5. Trends in supply and demand, based on consumer preferences, impact the animal agriculture producer.	4.25	.731
6. The Farm Bill should include all products relative to animal agriculture as being eligible for price and income support programs from the government.	3.66	.993
7. It is expensive to maintain an animal agricultural facility.	4.35	.662

Scale: 1=Strongly Disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree

The researcher tabulated the perceived views of the economic aspects of the animal agriculture industry based upon the gender of respondents. Table 10 displays the results by gender. In regards to question six there was a statistically significant difference by gender. Females agreed that the Farm Bill should include all products relative to animal agriculture to be eligible for government support in contrast to males who somewhat agreed. There was also a statistically significant difference in response by gender in question seven. Males only agreed that it was expensive to maintain an animal agricultural facility, while females strongly agreed.

Table 10

Perceived Views on Economic Aspects by Gender

Gender Perceptions	Gender	Mean	t	p
1. Animal agriculture is a major part of the United States economy and North Carolina's economy.	Male	4.19	-2.167	***.033**
	Female	4.60		

Table 10 (Cont.)

Perceived Views on Economic Aspects by Gender

Gender Perceptions	Gender	Mean	t	p
2. Government assistance and funding is important to animal agriculture producers.	Male	3.72	-1.596	.114
	Female	4.15		
3. Feed is the greatest cost for animal agricultural producers.	Male	4.13	-.083	.934
	Female	4.15		
4. The current economy has an effect on the prices of animal agricultural products.	Male	4.21	-.499	.619
	Female	4.30		
5. Trends in supply and demand, based on consumer preferences, impacts the animal agricultural producers.	Male	4.29	1.044	.299
	Female	4.10		
6. The Farm Bill should include all products relative to animal agriculture as being eligible for price and income support from the government.	Male	3.56	-1.768	***.081**
	Female	4.00		
7. It is expensive to maintain an animal agricultural facility.	Male	4.28	-1.935	***.056**
	Female	4.60		

Scale: 0=Neutral, 1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Agree, 5=Strongly Agree, Note, *p <0.05= statistically significant difference

The researcher tabulated the perceived views of the economic aspects of the animal agriculture industry based upon the race/ethnicity of respondents. Table 11 displays the results by race/ethnicity. There was not statically significant differences found based upon race/ethnicity.

Table 11

Perceived Views on Economic Aspects by Race/Ethnicity

Race/Ethnicity Perceptions	Race	Mean	t	p
1. Animal agriculture is a major part of the United States economy and North Carolina's economy.	White	4.65	-1.578	.118
	Minority	4.90		

Table 11 (Cont.)

Perceived Views on Economic Aspects by Race/Ethnicity

Race/Ethnicity Perceptions	Race	Mean	t	p
2. Government assistance and funding is important to animal agriculture producers.	White	3.81	-.256	.798
	Minority	3.90		
3. Feed is the greatest cost for animal agricultural producers.	White	4.14	.146	.884
	Minority	4.10		
4. The current economy has an effect on the prices of animal agricultural products.	White	4.27	1.499	.138
	Minority	3.90		
5. Trends in supply and demand, based on consumer preferences, impacts the animal agricultural producers.	White	4.22	-1.151	.253
	Minority	4.10		
6. The Farm Bill should include all products relative to animal agriculture as being eligible for price and income support from the government.	White	3.56	.536	.593
	Minority	4.50		
7. It is expensive to maintain an animal agricultural facility.	White	4.68	.264	.792
	Minority	3.50		

Scale: 0=Neutral, 1=Strongly Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, 4=Agree, 5=Strongly Agree, Note, *p <0.05= statistically significant difference

CHAPTER 5

Conclusions, Recommendations, and Implications

Conclusions

The purpose of this study was to analyze the perceptions of North Carolina animal agriculture producers related to the sociological, economic, and biological aspects of the animal agricultural industry. Based upon the findings of this research, the researcher was able to make the following conclusions, recommendations, and implications.

In respect to the sociological aspects of the animal agricultural industry, producers agreed that: 1.) People's perceptions of the animal agricultural industry are affected by animal rights groups, 2.) Animal agriculture producers and the animal agriculture industry have a responsibility to play an essential role in ridding the world of hunger, and 3.) Cultural and religious factors and consumer trends influence the sale of animal agricultural products. Female respondents showed a statistically significant difference compared to male respondents on their views on livestock being regulated by the Animal Welfare Act and people's perceptions of animal agricultural industry are affected by animal rights groups. This difference is supported by the study conducted by Herzog (2007) that found that women were more sympathetic to the treatment of animals than were men (Coleman, 2009). Female participants agreed that consumer concerns with organic foods puts pressure on animal agriculture producers to produce organic meat and organic products while men somewhat agreed. This can be supported by a 2010 study done Ilyasoğlu, Temel, and Özçelik that found that women and people who were more educated were more likely to buy organic foods rather than the study's other participants.

The views between minorities and white people showed no statistically significant difference. Minorities and white people agreed that: 1.) People's perceptions of the animal

agricultural industry are affected by animal rights groups, 2.) Cultural and religious factors and consumer trends influence the sale of animal agricultural products, and 3.) The animal agricultural industry does have a significant impact on the environment. It can be concluded that race/ethnicity had no impact upon the producers' perceptions upon the sociological aspects of the animal agricultural industry.

In the case of the biological aspects of the animal agricultural industry, tended to strongly agree that the prevention and control of diseases, herd or flock health management; and veterinary care important to the animal agricultural industry and proper nutrition is important to the animal agricultural industry. Females and males agreed about the biological aspects and showed no statistically significant differences. According the Animal Agricultural Alliance (2012), most producers follow all animal welfare guidelines to make sure that their animals are healthy and comfortable.

The perceptions of minorities and white people toward the biological aspects of the animal agricultural were similar. Minority and white participants responses showed no statistical significance. It can be concluded that race/ethnicity has no impact upon the perceptions of animal agricultural producers on livestock care and other biological aspects.

Producers agreed that: 1.) Feed is the greatest cost for animal agriculture producers, 2.) The current economy has an effect on prices of animal agriculture products, 3.) Trends in supply and demand, based on consumer preferences, impact the animal agricultural producer, and 4.) It is cost expensive to maintain an animal agricultural facility. Producers have to produce a quality product to meet the demands of consumers and support their families. Resources put in by the producer are used in manufacturing a quality product. The key inputs of agricultural producers are feed, labor, and capital (both equipment and financial capital) (Dyck & Nelson, 2003). In the

current economic state and the technological shift in the animal agricultural industry, small and mid-sized operations will have to manage in the integrated larger scale production (Boehlje, 2006). In order to meet these changes, these producers may have to find niche markets that require consumers to pay high enough costs to meet the costs of producing, processing and distribution in small amounts (Boehlje, 2006).

In regards to economic aspects of the animal agricultural industry, Females agreed that the Farm Bill should include all products relative to animal agriculture as being eligible for price and income support from the government, while men somewhat agreed. It was also found that Female participants strongly agreed that it is expensive to maintain an animal agricultural facility, while men just agreed. It can be concluded that women need more supports as producers than male producers.

The perceptions of minorities and white people were similar for the economic aspects of animal agricultural industry. There were not statistically significant differences in their answers. It can be concluded that race/ethnicity does not have an impact on the perceptions of producers relative to the economic aspects of the industry.

Recommendations

Overall, the views of North Carolina animal agriculture on the sociological, biological, and economic aspects of the animal agricultural industry were similar. After analyzing the data in this study, the following recommendations were made:

1. More literature should be done to address the needs and perceptions of animal agricultural producers on their industry.

2. Animal agricultural producers could make their practices more known to the public so the consumers know more about their food and producers can show how well they take care of their livestock.
3. Animal agricultural producers could be more educated on possible funding avenues, particularly government grants.
4. There could be more inclusion of women and minorities in animal agricultural industry.

Implications

Based on the findings, conclusions, and recommendations presented in Chapters 4 and 5, the research is lead to present several implications. From the presented research, people will become more aware of what producers must do to supply them with their food. It will hopefully make others more sensitive to the animal agricultural producer and what they perceive about their industry.

The findings of this study showed the importance of animal to the producer. In order to meet the needs of the consumer, the producer must supply their livestock with the proper nutrition and health care in settings that foster production and growth. In supplying the resources necessary to produce, the producer must have the capital to maintain the animals and their facilities. The findings from this study should give an indication of how expensive it is to producer animal agricultural products and keep the facility running. This should suggest the level of care that producers put into their livestock and will hopefully bring a positive view to the animal agricultural industry which in turn will change people's perceptions about the animal agricultural industry.

The findings of the study showed how the sociological, biological and economic aspects of the animal agricultural industry have an impact on the animal agricultural producers. This

research showed how producers are aware of the needs and concerns of their consumers and how that affects how and what they produce. The producer knows and understands that they feed the world and the responsibility that comes with that.

In understanding the significance of the animal agricultural industry to the North Carolina, the United States and the world, people will understand the importance of what the animal agricultural producer does. This will hopefully foster more supports for small and medium sized operations to continue the legacy of animal agriculture. Along will supports maybe education will be provided, especially to minorities to keep all who want to participate in animal agriculture involved and equip to maintain their facilities. From the demographic data, it is obvious that women and racial minorities are not prominent in animal agriculture. This study does show that they are just as significant in the animal agricultural industry. One would hope that from this study, a positive spotlight would be placed upon these minorities and supports be provided to help them maintain and even increase their numbers. In diversifying the industry, it will be enhanced and more able to meet the needs of the world's people.

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Appendix A

"An Assessment of Animal Agricultural Producers Within North Carolina in Relation to Their Perceptions Regarding the Animal Agricultural Industry"

North Carolina Animal Agricultural Producers' Survey

Section I. Sociological Aspects of the Animal Agricultural Industry

Directions: The following section is designed to gauge your opinions on the sociological aspects of the animal agriculture industry. Place an "X" under the choice that best describes your opinion.

Sociological Aspects of the Animal Agriculture Industry	***Strongly Disagree***	***Disagree***	***Undecided***	***Agree***	***Strongly Agree***
1. People's perceptions of the animal agriculture industry are affected by animal rights groups.					
2. Livestock should be regulated under the Animal Welfare Act.					
3. Animal agriculture producers and the animal agriculture industry have a responsibility to play an essential role in ridding the world of hunger.					
4. Religion and other cultural factors influence the sale of animal agricultural products.					
5. Special diets, like vegetarianism, affect the animal agricultural industry.					
6. Consumer concerns with organic foods puts pressure on animal agriculture producers to produce organic meat and animal products.					
7. As an animal agriculture producer, it is important to understand consumer based trends and accommodate the needs of different culture backgrounds.					
8. The animal agricultural industry does have a significant impact on the environment.					

Section II. Biological Aspects of the Animal Agricultural Industry

Directions: The following section is designed to gauge your opinions on the biological aspects of the animal agriculture industry. Place an "X" under the choice that best describes your opinion.

Biological Aspects of the Animal Agricultural Industry	***Strongly Disagree***	***Disagree***	***Undecided***	***Agree***	***Strongly Agree***
1. The prevention and control of disease is important to the animal agricultural industry.					
2. Genetics and breeding are a significant part of producing a quality product in the animal agricultural industry.					
3. Intensive housing structures and feedlots have a great impact on growth rate and health.					
4. Proper nutrition is important to the animal agricultural industry.					
5. Geographic factors (climate, weather, and land) work with nutrition, labor and capital to determine where livestock industries will be successful.					
6. A herd or flock health management program is essential to being successful in the animal agricultural industry.					
7. Animal agricultural producers must understand the biological anatomy of their animals.					
8. Veterinary care and general health care measures are important to the animal agricultural industry.					

Section III. Economic Aspects of the Animal Agricultural Industry

Directions: The following section is designed to gauge your opinions on the economic aspects of the animal agriculture industry.Place an "X" under the choice that best describes your opinion.

Economic Aspects of the Animal Agricultural Industry	***Strongly Disagree***	***Disagree***	***Undecided***	***Agree***	***Strongly Agree***
1. Animal agriculture is a major part of the United States economy and North Carolina's economy.					
2. Government assistance and funding is important to animal agricultural producers.					
3. Animal agricultural products are major trade and high revenue producing commodities for the United States with other countries.					
4. Feed is the greatest cost for animal agricultural producers.					
5. The current economy has an effect on the prices of animal agricultural products.					
6. Trends in supply and demand, based on consumer preferences, impacts the animal agricultural producers.					
7. The Farm Bill should include all products relative to animal agriculture as being eligible for price and income support programs from the government.					
8. Animal agriculture producers receive a small profit, with the smaller the facility the smaller the profit.					
9. It is cost expensive to maintain an animal agricultural facility.					

Section IV. Animal Agricultural Operations Demographics

Directions: For the demographic questions below please provide the pertinent response.

1. How large is your agricultural operation?
   ____1-49 acres ___ 50-99 acres ___100-150 acres ___ 200 acres or more

2. What livestock species are raised on your agricultural operation? (Select all that apply)
   _____ Aquaculture
   _____ Beef cattle
   _____ Dairy cattle
   _____ Goats
   _____ Horses
   _____ Poultry
   _____ Sheep
   _____ Swine

3. How many labors work at your animal agricultural facility?

____ 1-10 _____11- 20 ____21-30 ___31-40 ___41-50 ___50 or more

4. Approximately how many livestock are on the agricultural operation?

   ____1-49 ___ 50-99 ___100-150 ___ 200 or more

5. Is your agricultural facility more intensive and indoor or pasture based and outside?
   _____ Intensive/ Indoor
   _____ Outside/Pasture

Section V. Demographics of Animal Agricultural Producers

Directions: For the demographic questions below please provide the pertinent response.

1. What is your age?

_____18-25 _____26-35 _____36-45 _____46-55 _____56 or older

2. Gender:
_____Male _____ Female

3. Race/Ethnicity:
_____ Asian
_____ Black
_____ Hispanic
_____ Native Americans
_____ White
_____ Other

4. Highest form of education obtained:
____ High School Diploma
____ Bachelor's
____ Master's
____ Specialist
____ Doctorate

5. How many years have you participated in the animal agricultural industry?
____ 1-10 _____11- 20 ____21-30 ___31-40 ___41-50 ___50 or more

6. What livestock are you most familiar with? (Select all that apply)
____Aquaculture
____Beef cattle
____Dairy Cattle
____Goats
____Horses
____Poultry
____Sheep
____Swine

7. Where did get you animal agriculture experience? (Select all that apply)
____Agriculture Related Organization
____Family Farm
____High School Agriculture Program
____Veterinarian Office
____Volunteer on a Farm or Livestock Facility

____Worked on a Farm
____Other____

8. Are you affiliated with any agricultural organizations, councils, ect? Please provide if possible. _____
____Aquaculture Commodity Group
____Beef Catte Commodity Group
____Dairy Cattle Commodity Group
____Goats Commodity Group
____Horse Commodity Group
____Poultry Commodity Group
____Sheep Commodity Group
____Swine Commodity Group
____Farm Bureau
____The Grange
____Other____

9. When you have an issue with regards to your animal agriculture operation, where do you obtain your information to address these issues? (Select all that apply).
____Corporative Extension
____Private Industry Experts
____University Specialist
____Internet Based Sources
____Veterinarians
____ Local Markets, Feed Stores, Stockyards, ect.
____ Television, Radio, Local Newspaper
____Other (please specify) ____

Appendix B

INFORMED CONSENT FORM

You have been asked to participate as a subject in a research project that involves The North Carolina animal agriculture producers' opinion and perception of the sociological, economic, and biological aspects of the animal agriculture industry. The purpose of the study is to analyze the opinions of North Carolina animal agricultural producers to gage the animal agricultural industry. This project is under the direction of Dr. Antoine J. Alston, a professor in North Carolina A & T State University's Department of Agribusiness, Applied Economics, and Agriscience Education in the School of Agriculture and Environmental Sciences. If you choose to participate in the project, you understand that you will be asked to complete a survey questionnaire. You have been told that your participation in the project will not involve any known risks or discomfort. There is also not likely to be any direct benefit to you, except knowledge gained from this study. I hope this will contribute to a better understanding of the utilization of animal derived products. You understand that no information on this survey will personally identify you.

A report of general and combined results from several participants in this project will be prepared for the Department of Agribusiness, Applied Economics, and Agriscience Education in the School of Agriculture and Environmental Science and may be submitted to a professional publication or conference at a later time.

The principal investigator, Jessica V. Gowins, has offered to answer any **DISCLAIMER** questions that you may have about my (principal investigator) involvement in this project. You understand that you may end your participation at any time. You understand that a signed statement of informed consent is required of all participants in this project. Your signature indicates that you understand and voluntarily agree to the conditions of participation described above. If you have any questions about your rights as a research participant, you should contact the Compliance Office at (336) 334-7995.

_____ _____

Signature of Subject Date Signature of Principal Investigator Date