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Production information needs of American Boer Goat Association members in the Midwestern United States

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by

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DEDICATION

This thesis is dedicated to my family and friends, especially my Mom and Dad. Thank you for all of your support as I fight to follow my dream. This has been a long road and I know with certainty that I would not have gotten this far without your love and support.

"Success is not the key to happiness. Happiness is the key to success. If you love what you are doing, you will be successful." ~Albert Schmietzer

It is also dedicated to the people in the goat industry who have inspired me to keep going and to make sure that nothing stands in my way.

"Education is the most powerful weapon we can use to change the world." ~Nelson Mandela

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ABSTRACT

The goat industry in the United States is growing. The low input costs of production (USDA, 2005) has attributed to the gaining popularity of goats to producers in developed countries, such as the United States. With this growth comes a demand for a quality product to allow producers to compete in a growing world market. Without timely and adequate information producers could get pushed out of the market because of a less than standard product.

The purpose of this study was to determine the adequacy in terms of quality and quantity of the goat production information available to producers. This study was also conducted to report the demographics of American Boer Goat Association members in the Midwestern United States; determine the knowledge level of goat producers in regards to the goat industry; and determine the barriers that are limiting respondents' operations. Additionally, this study sought to identify the perceived level of preference for delivery/method and level of goat production information materials used in the industry currently, as well as what goat producers would like to see in the future. Producers were also asked which production categories they would like to see additional research information.

The population (N=944) for this study consisted of American Boer Goat Association members in the Midwestern United States. A random sample (*n*=300) was drawn from the population to complete a researcher-developed, baseline survey instrument. Results from the study suggested that producers do not find the amount of goat production information adequate to meet their needs. Producers suggested that there should be more goat information in all production information categories, especially health, marketing, meat production and quality, and nutrition. The Internet is the most frequently utilized resource by respondents to this study,

and should be utilized for further goat production information distribution to producers. This study should be replicated in other regions of the United States due to different types of resources and production systems. Different goat associations should also conduct further research to determine if the needed goat production information is the same as it is for the American Boer Goat Association members in the Midwestern United States or if there are significant differences.

CHAPTER I. INTRODUCTION

For thousands of years goats have provided humans with food, drink, and even clothing. Historically, goats have been used as pack animals, as a sign of wealth, and have been at the center of religious rituals (Solaiman, 2010). Even with such a long history of human domestication, very little research has been performed on goats until the past 20 years (Solaiman, 2010). Goats "have lagged behind cattle and sheep in breed organization and market development" (Haenlein, 1996, p. 1173) even though they were among the first domesticated livestock to arrive in the United States with the European settlers. It is estimated that 90% of the one-half billion goats in the world are found in developing countries (Food and Agriculture Organization, 1985). With the recent large number of immigrants from these countries, the United States has begun to realize an increase goat production (USDA, 2005).

Most goat meat and milk is produced and eaten within the country of origin. For example, China was the highest producer of goat meat in 2007; however, it only ranked third among top goat meat exporters (Solaiman, 2010). The United States was the highest importer of goat meat in 2007, importing 10.2 metric tons (Food and Agriculture Organization Statistics Division, 2007). While these numbers illustrate the amount of goat meat that is eaten by the residents within each country, the data is similar for many other countries around the world. The numbers may actually be higher than research shows because many goats are not taken to slaughter facilities, but slaughtered and fabricated on the farm from which they originated, so the actual number of goats consumed in any specific country is impossible to determine (Soliaman, 2010). Researchers have suggested that only 55 to 65 percent of the United States goat population was counted in the 2002 United States census (USDA, 2005).

The low input costs of production (USDA, 2011) have recently made goats more popular to producers in developed countries such as the United States (Solaiman, 2010). The growth of the United States goat population from 1987 to 2002 was 23 percent (USDA, 2005). The Midwestern United States, as defined by U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) namely: North Dakota, South Dakota, Nebraska, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Michigan, Indiana and Ohio, has seen steady production of goat numbers, including both meat and milk goats, over the past 7 years (USDA, 2008-2014). Although goat meat is not as popular in the United States as in other countries, in 2011 the United States was the top importer of goat meat in the world (Food and Agriculture Organization Statistics Division, 2011) importing about 15,752 metric tons (Food and Agriculture Organization Statistics Division, 2011). Much of this was due to the melting pot effect of the United States where individuals immigrated to the United States from all over the world (USDA, 2005). In many of their home countries, goat meat, or chevon, and goat milk is a staple in the diet (Solaiman, 2010). This creates a demand for goat when they immigrate to the U.S. The demand for chevon is on a rise in the United States, but so is the demand for fluid goat milk as a drink as well as for its use in artesian cheeses (Haenlein, 1996).

About two percent of the world's total milk supply comes from goats (Food and Agriculture Organization, 2004). This is extremely important in developing countries where cow milk is scarce. Goat milk provides much needed nutrition that individuals would otherwise not receive (Haenlein, 2007). The majority of goat milk produced in the United States is traditionally used to make cheese, which is considered a delicacy (Solaiman, 2010). Goat milk isn't traditionally consumed as a drink in the U.S.; however, people with allergies to cow's milk and those with lactose intolerance can drink goat's milk with less negative health issues (Haenlein,

1996). This growing demand requires goat producers to produce a quality product, while at the same time allows producers the opportunity to be profitable.

The Boer Goat

The introduction of Boer goats to the United States in 1993 was the "most important event in U.S. goat meat production" (USDA, 2005, p. 3). The Boer goat originated in South Africa, but the breed has been utilized worldwide "to upgrade indigenous goats and improve meat production" (Solaiman, 2010, p. 26). This breed traditionally has a white body and a red head, but currently can be found in black, red, blonde, dappled, and painted. They are a large framed and heavy muscled breed of goat. Males weigh between 240 and 300 pounds and females usually weigh between 200 and 225 pounds (USDA, 2005; Solaiman, 2010). Producers choose this breed for its impressive size and production characteristics such as kidding ease and amount of meat produced (USDA, 2005). The American Boer Goat Association (ABGA) was founded in 1994 as a breed registry. Since that year, over 30,000 producers have joined the breed association (ABGA, 2014), but there has been no current published information about the demographics of the producers who are members of this association.

Statement of the Problem

The main concern within the goat industry is there is little education, Extension, and research available on goats (Solaiman, 2010). This lack of production information material can cause problems with animal care, marketing, and profitability of raising goats. The goat industry, like other livestock industries, depends on research and education within the species to be provided to producers. Per the Association of Public and Land-grant Universities (APLU) (2010), "[t]oday more than ever, public and private decision makers need new technologies and information to transform agriculture into an industry that is more resilient and adaptive to

change" (p. 4, as cited in Doerfert, 2011). Land-grant universities and Extension are responsible for researching and presenting the information gathered in a way that producers can understand and apply (Meeker, 1999). This concept relies on the Land-grant Mission of research, Extension, and teaching (Meeker, 1999). In order to better fulfill this mission and to better achieve the needs of the industry, research must be done and materials provided from issues presented by the producers (Solaiman, 2010).

Doerfert (2011) described the need for the agricultural industry to better prepare new methods for reaching the populous through improved educational practices. More specifically, the American Association for Agricultural Education's (AAAE) National Research Agenda (NRA; Doerfert, 2011) Priority 2: New Technologies, Practices and Products (p. 15) illustrated that "related research, education, and Extension activities must continually change to … new challenges and opportunities" (p. 16). Accordingly, because the goat industry is continuously experiencing changes in production systems, information, etc., attention must be paid to this commodity group as well (Solaiman, 2010). Thus, the primary research question that emerged was this: What production information and research needs do members of the American Boer Goat Association have in the Midwestern United States?

Purpose and Objectives

A descriptive study was utilized to determine the production information and research needs of American Boer Goat Association (ABGA) members in the Midwest, thus allowing educators, researchers and Extension to assist these individuals with their production systems. The objectives were as follows:

- Report demographics of American Boer Goat Association members in the Midwestern United States.

- Determine the knowledge level of goat producers in regards to the goat industry.
- Determine what production information categories are barriers that limit goat producers' operations.
- Determine goat producers' perceived level of adequacy regarding current production information materials' quality and quantity used in the industry.
- Determine goat producers' current preferences for resources and level of production information categories, and preferences for future materials.
- Determine production categories in which goat producers seek research information.

Need for Study

To provide education within an industry, concentration on needs-based research is most effective (Schafer, 2006). Needs-based research specifies that the concentration of research should be on "resolving farmer's problems and constraints" (Solaiman, 2010, p. 14) as defined by the farmer or producer. Without this crucial step in research and education, educators and researchers run the risk of overlooking important barriers to producers. This study is the first step in Solaiman's (2010) concept, to assess the needs of the producers and build upon them. It is also the first step in Borich's (1985) needs-assessment model to satiate the self-actualization level of Maslow's (1954) Hierarchy of Needs in regards to goat production and the goat industry.

Implications and Educational Significance

This study was utilized to determine perceptions of goat producers regarding the adequacy of production information available to them. Data collected offers educators and researchers the currently perceived needs of the producers involved in the goat industry. If the production information needs of producers can be better understood, appropriate materials can be developed and implemented to assist producers in improving the care of their animals, make a

higher profit, and be able to further compete in the growing market. "Research is meaningless if it does not drive development, and development programs are futile if they do not involve farmers as partners" (Solaiman, 2010, p. 15). In order to determine if the production information materials currently in circulation are sufficient, producers should be asked how the current materials are assisting them, and if the production information is not sufficient then action must be taken accordingly.

Definition of Terms

- ABGA- American Boer Goat Association – "Today, the American Boer Goat Association™ offers a variety of opportunities in marketing, education, commercial industry and youth. The association registers over 45,000 head annually and has over 7,000 members." (ABGA, 2014).
- Breed- "Animals having a common origin and characteristics that distinguish them from other groups within the same species." (Campbell, Kenealy, & Campbell, 2003).
- Needs assessment- "A systematic set of procedures undertaken for the purpose of setting priorities and making decisions about a program or organizational improvement and allocation of resources. The priorities are based on identified needs." (Altschuld & Witkin, 1995).
- Melting pot- "a place (such as a city or country) where a variety of races, cultures or individuals assimilate into a cohesive whole." (Merriam-Webster, 2014).

Organization of Thesis

This thesis is organized into five chapters: introduction, literature review, methodology, findings, and conclusions. The introduction is a brief overview of the goat industry and its

current informational basis or lack thereof. The literature review will demonstrate the current available production information and its drawbacks. Chapter three, the methodology chapter, will give an in-depth description of the methods used to conduct the survey, including a description of the instrument and population. Chapter four will present the findings from this descriptive study. The final chapter will include the conclusions, implications, and need for additional research that resulted from this study.

References

Altschuld, J. & Witkin, B. (1995). *Planning and Conducting Needs Assessments.* Thousand Oaks, CA: Sage Publications.

American Boer Goat Association. (2014). American Boer Goat Association. Retrieved from http://www.abga.org/page.php?pageid=2

Association of Public and Land-grant Universities (APLU), Experiment Station Committee on Organization and Policy—Science and Technology Committee. (2010). *A science roadmap for food and agriculture*. Retrieved from escop.ncsu.edu/docs/scienceroadmap.pdf

Borich, G. (1985). Needs assessment and the self-evaluating organization. *Studies in Educational Evaluation. 11*(2) 205-215. doi: 10.1016/0191-491X(85)90023-9

Campbell, J., Kenealy, D., Campbell, K. (2003). *Animal Sciences: The Biology, Care, and Production of Domestic Animals: 4th edition.* New York, NY: McGraw Hill.

Doerfert, D. (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011-2015.* Lubbock, TX: Texas Tech University, Department of Agricultural Education and Communication.

Food and Agriculture Organization. (1985). Production Yearbook. Vol. 39. Food and Agriculture Organization. Rome, Italy.

Food and Agriculture Organization. (2004). Production Yearbook 2003. Food and Agriculture Publication. Rome, Italy. *57*(1) 213-215, 241-242.

Food and Agriculture Organization Statistics Division. (2007). Food and Agriculture Organization of the United Nations. Rome, Italy. Retrieved from http://faostat3.fao.org/faostat-gateway/go/to/download/T/TP/E

Food and Agriculture Organization Statistics Division. (2011). Food and Agriculture Organization of the United Nations. Rome, Italy. Retrieved from http://faostat3.fao.org/faostat-gateway/go/to/download/T/TP/E

Haenlein, G. (1996). Status and prospects of the meat goat industry in the United States. *Journal of Animal Science 74*(5), 1173-1181.

Haenlein, G., and Park, Y. (2007). Goat milk, its products and nutrition. In: *Handbook of Food Products Manufacturing* (59-106). Y.H. Hui, Ed., John Wiley & Sons, Inc. New York, NY.

Maslow, A. (1954). *Motivation and Personality.* New York, NY: Harper & Row.

Meeker, D. (1999). What are the livestock industries doing, and what do they need from us? *Journal of Animal Science 77*(2), 361-366.

Merriam-Webster. (2014). "Melting Pot." *Merriam-Webster.com*. Retrieved from <http://www.merriam-webster.com/dictionary/melting pot>.

Schafer, S. (2006). Clientele perceptions of the University of the Wyoming Cooperative Extension Service livestock program. *Journal of Extension 44*(2) 2RIB6

Solaiman, S. (2010). *Goat Science and Production*. Blackwell Publishing: Ames, IA.

United States Department of Agriculture. (2005). The Goat Industry: Structure, Concentration, Demand and Growth. Retrieved from http://www.aphis.usda.gov/animal_health/emergingissues/downloads/goatreport090805.pdf

United States Department of Agriculture. (2008). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. February 1, 2008. Retrieved from http://usda01.library.cornell.edu/usda/nass/SheeGoat//2000s/2008/SheeGoat-02-01-2008.pdf

United States Department of Agriculture. (2009). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. July 24, 2009. Retrieved from http://usda01.library.cornell.edu/usda/nass/SheeGoat//2000s/2009/SheeGoat-07-24-2009.pdf

United States Department of Agriculture. (2010). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. July 23, 2010. Retrieved from http://usda01.library.cornell.edu/usda/nass/SheeGoat//2010s/2010/SheeGoat-07-23-2010.pdf

United States Department of Agriculture. (2011). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. January 28, 2011. Retrieved from http://usda01.library.cornell.edu/usda/nass/SheeGoat//2010s/2011/SheeGoat-01-28-2011_new_format.pdf

United States Department of Agriculture. (2012). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. January 27, 2012. Retrieved from

http://usda01.library.cornell.edu/usda/nass/SheeGoat//2010s/2012/SheeGoat-01-27-2012.pdf

United States Department of Agriculture. (2013). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. February 1, 2013. Retrieved from http://usda01.library.cornell.edu/usda/nass/SheeGoat//2010s/2013/SheeGoat-02-01-2013.pdf

United States Department of Agriculture. (2014). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. January 31, 2014. Retrieved from http://usda01.library.cornell.edu/usda/current/SheeGoat/SheeGoat-01-31-2014.

CHAPTER II. LITERATURE REVIEW

This chapter provides an overview of the available literature associated with the meat goat industry as well as provides the framework for the study. There is a brief introduction to the Boer goat breed as well as a brief description of the American Boer Goat Association. This chapter also presents: the framework for a descriptive study, research needs of the goat industry, current goat production information available, shortage of goat production information available, the need for research in the goat industry, and the conceptual framework for this study.

Descriptive Research

Reviews of online issues of the *Journal of Agricultural Education* (JAE, 2014), the *Journal of Animal Science* (JAS, 2014), and the *Journal of Extension* (JOE, 2014) returned nothing when *production information needs of producers* was used in the search engine. This indicates that there has been no documented research published on the needs of livestock producers in any of these noted journals. The studies found regarding production and/or educational needs of producers are usually very specific to one area of knowledge such as: swine and beef producers' risk management perceptions and desire for further risk management education (Hall, 2003; Patrick, 2007), animal health information needs in the U.S.A. (Hueston, 1990) and *Sources and channels of information used by beef producers in 12 counties of the Northwest Florida Extension district* (Vergot, 2005). The researchers could find no general survey research that asked any livestock producers' group (swine, cattle, sheep, poultry, etc.) about their production information needs. This observation led to the decision to develop a baseline study to create a foundation for future research.

Current Goat Information Availability

When producers have questions regarding production practices they must search for accurate information that meets their needs. Many producers turn to the Internet to find needed production information, but many times it is difficult for producers to determine immediately if the information available is valid or invalid (Gipson, et al, 2004). Only through trial and error do producers find out if the information is helpful or harmful to their operations. Discussion in online forums is gaining popularity, but what works for one producer may not work for another (Gipson, et al, 2004).

Books are another source for producer information. *Storey's Guide to Raising Meat Goats* (Sayer, 2010), *The Meat Goat Handbook* (Tucker, 2012), and *Raising Goats for Dummies* (Smith, 2010) are a few common books currently available (Gipson, et al, 2004). These books are not peer reviewed and some of the information in these books is untested. There are peer reviewed books available such as *Goat Science and Production* (Solaiman, 2010) and *Meat Goat Production Handbook* (Gipson et al, 2004). In addition, the *Meat Goat Production Handbook* was a limited print, and the next version will not be available until the end of 2014 (Langston University, 2014).

Journals, such as the *Journal of Animal Science* (JAS, 2014), provide interesting research data that has been completed worldwide. The research conclusions can sometimes be applied to various situations which may assist producers, such as with Whitley's (2008) *Use of a commercial probiotic supplement in meat goats*. However, some research such as *Development and application of a crossbreeding simulation model for goat production in tropical regions* (Tsukahara, 2011) may not have any bearing on United States' goat production systems because

tropical regions are only within 30 degrees of the equator (Sahlu, 2009). The number of producers who have access to journals such as the *Journal of Animal Science* (JAS, 2014) is also unknown.

Shortage in Goat Information Available

Goat production information is not just for goat producers, but is important for students studying Animal Science as well. Goats and their production information are included in animal science books used in high school and college classrooms across the nation. "The limited amount of information about goats compared with sheep and cattle is evident from a simple search for published literature, records of journal articles, theses, patents, software and technical reports related to agriculture" (Solaiman, 2010, p. 360). Some of these books have very little goat information when compared to other species. For instance, in the book used for Iowa State University's Animal Science 114 class, *Animal Sciences: The Biology, Care, and Production of Domestic Animals* (Campbell, 2003), there are eight entries for goats and none for kids in the index while there are: 17 entries for sheep and lamb, 16 entries for swine and pig, and 38 for cows, beef cattle, dairy cattle, and cattle (Gallet de St. Aurin, 2011). This limits the exposure of students to the goat industry. "The number of hits recorded [in an online search] for teaching information for sheep and cattle were 4- and 12- fold higher than for goats, respectively" (Solaiman, 2010, p. 361).

Need for Research in the Goat Industry

Analysis of the goat industry has turned up one reoccurring theme; more research needs to be done in the goat industry (Sahlu, 2009). Since the introduction of the Boer goat to the United States in 1993, there has been an increase in research, but still more is needed (USDA,

2005). “Typically goats are easier to manage and less costly to raise than many livestock species” (USDA, 2011, p. 3) which may be the reason for the increased popularity of raising goats. Goat meat production, specifically, is being driven by the increasing ethnic diversity within the United States (USDA, 2005). The number of goats has been on a steady rise for the past 20 years (USDA, 2005). However, the United States is still the 2nd highest importer of goat meat in the world, importing about 15.7 metric tons in 2011 (Food and Agriculture Organization Statistics Division, 2011). Increasing research in areas that producers require information, such as nutrition, health, reproduction, parasites and management practices (Solaiman, 2010) could increase productivity as well as profit.

It is one of the missions of land grant universities to provide Extension to producers and provide them with information beneficial to their production through Extension (Comer, 2006). The needs of producers should be the concern of universities and Extension agents alike (Solaiman, 2010). Therefore, the research conducted in the goat industry should be based on the needs of producers. “There are few institutions or universities with personnel dedicated to providing goat production information to producers, county Extension educators or young farmer advisors” (Gipson, 2004, p. 1) which makes attaining unbiased information and difficult. The total number of goats in the United States, via census information, is approximately 2.76 million head (USDA, 2014). However, experts agree that the total number of goats in the United States is much higher than census numbers indicate (USDA, 2005). With these numbers, it becomes “apparent that instruction quality materials covering goat science and production are lacking” (Solaiman, 2010, p. 361).

There are many areas in the goat industry where additional research is needed. Analysis done by Sahlu (2009) identified an increase in the amount of goat research, but that it has not

kept pace with the increase in production. "Future research areas must be carefully considered and focused on the most important limitations to profitable and efficient production of goats and use of their products," (Sahlu, 2009, p. 400). Solaiman (2010), Sahlu (2009), and even the USDA (2005) detail the areas in the goat industry that need attention including, but not limited to: nutrition, production and management, reproduction, breeding and genetics, health, parasites, housing, product availability and quality, and production systems. Researchers (Sahlu, 2009; USDA, 2005) identified different research opportunities in specific fields, but only Solaiman (2010) emphasized "the importance of needs-based research, in which research is focused on resolving farmers' problems and constraints" (p. 14).

Theoretical Framework

A needs-assessment, according to the Borich concept, identifies the performance requirements and the "gap" between existing and needed information (Wingenbach, 2013). Altschuld and Witkin (1995) have another, but similar, definition for a needs assessment: "a series of procedures for identifying and describing both present and desired states in a specific context, deriving statements of need and placing the needs in order of priority for later action," (p. 10).

A needs assessment is conducted to determine how to assist individuals with reaching the self-actualization level, the highest level, of Maslow's Hierarchy of Needs (1954). Maslow's (1954) theory has five levels and his theory suggests that before an individual can start a new level, all the needs in prior levels must be fulfilled (Maslow, 1954). The five levels of Maslow's theory as shown in Figure 1 are: 1) physiological, 2) safety, 3) love/belonging, 4) esteem, and 5) self-actualization (Maslow, 1943).

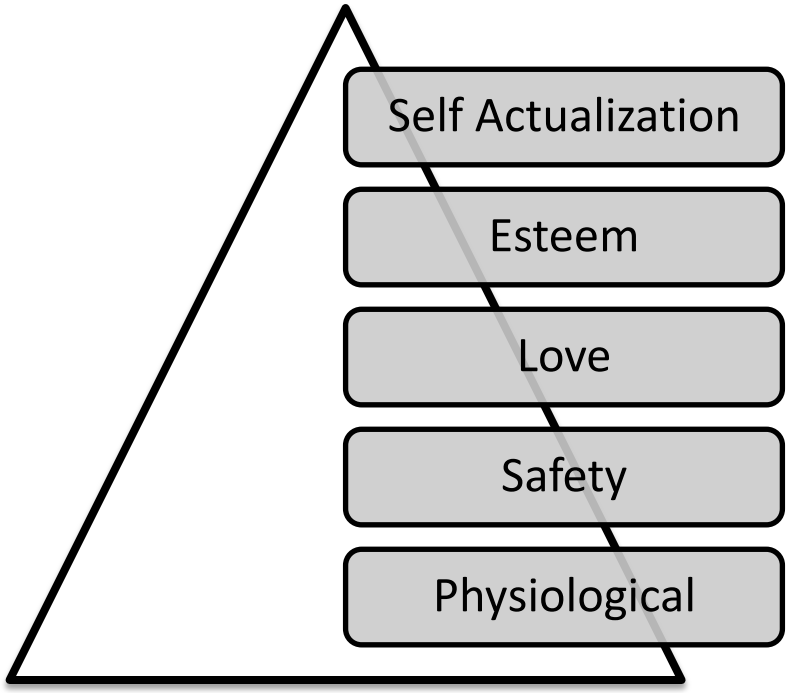

Figure 1. Maslow's Hierarchy of Needs (adapted from Maslow, 1943)

The physiological needs in the first level include: breathing, food, water, sex, sleep, and excretion (Maslow, 1954). Maslow (1943) argues that this stage is almost entirely about creating homeostasis within the individual's body. He also states that some of the manifestations of the physiological needs could actually be "channels" (Maslow, 1943, p. 373) to other needs. For instance, an individual who is hungry might not actually need the nutrients in his system but instead need the comfort of having food (Maslow, 1943). If the physiological needs are not satisfied the other needs of the individual will cease to exist or be pushed out and replaced causing the individual to concentrate fully on the physiological need.

The next level includes the safety needs. The safety needs are: security of the body, security of employment, security of resources, security of morality, security of the family, security of health, and security of property (Maslow, 1954). In children these needs are very

important, which is why creating routines and supporting children is so vital (Maslow, 1943). To see how important this level is, it is important to not consider a person who feels safe, but someone who suffers from "neurosis or near neurosis" (Maslow, 1943, p. 379). When the physiological needs of an individual are met, these needs may seem to become even more important than the physiological needs. Individuals in these states spend a majority of their life searching for safety, sticking to the things they know and staying away from the unknown (Maslow, 1943). Their need to satisfy this stage overtakes any other need.

The love needs are the next level in Maslow's theory. They include the need for love, friendship and intimacy (Maslow, 1943). "In our society the thwarting of these needs is the most commonly found core in cases of maladjustment and more severe psychopathy" (Maslow, 1943, p. 382). Maslow notes that in this case love is not considered sex for the purpose of this level. Sex is just the physical act which falls under the physiological level. Intimacy, or the connection between individuals, is included in this level.

The fourth needs level is esteem. These needs are: self-esteem, confidence, achievement, respect of others, and respect for others (Maslow, 1954). Most individuals have a desire for a firmly based self-esteem which is based on achievement, and respect from other people (Maslow, 1943). This needs level can be broken down into two categories. The first is "the desire for strength, for achievement, for adequacy, for confidence in the face of the world, and for independence and freedom" (Maslow, 1943, p. 382). The second category is the desire for reputation, importance, and appreciation from others. Without this level fulfilled, people can feel helpless and inferior to others (Maslow, 1943).

The final level of Maslow's Hierarchy of Needs is the self-actualization level. This final level includes: morality, creativity, spontaneity, problem solving, lack of prejudice, and acceptance of facts (Maslow, 1954). Maslow (1943) states that in this level: "what a man can be, he must be" (p. 383) and a desire "to become everything that one is capable of becoming" (p. 383). This level is the stage that covers curiosity and self-improvement. This is the level that educators and researchers work within. Herzberg, Mausner and Snyderman (1959) utilize Maslow's (1943) theory when approaching motivating workers and made a good point when they asked: "How are you going to solve the dilemma of trying to motivate [or assist] [producers] who have a continuously revolving set of needs?" (p. 110). The Borich needs-assessment model is utilized to determine the level of need for a particular item within this level and therefore determines the most important need to the producer at the current time.

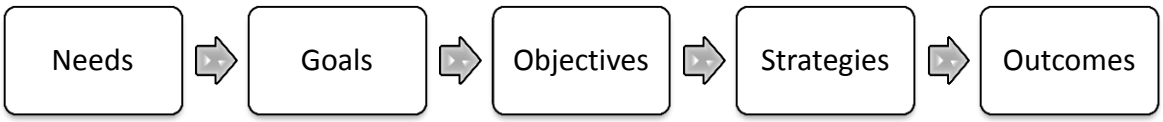

Figure 2: Borich's Needs Assessment Model (adapted from Borich, 1985)

Borich (1985) divides a needs assessment into five judgment stages: needs, goals, objectives, strategies and outcomes (Borich, 1985, p. 209). "At the needs stage, the judgment criteria constitute the felt needs, wants and desires of some client group who provide the impetus for the program," (Borich, 1985, p. 208). This stage simply lays the groundwork for the next stage which is setting the goals for the program being developed or worked with. The goals for a program would be based upon the needs presented, from the information collected from the clients or individuals in the first stage (Borich, 1985). These goals would be completed by a university, an Extension office (Karbasioun, 2007), business, or associations (Bowen, 1995).

The goals created for the chosen organization should then be arranged into objectives for a program being created or adjusted. These objectives are narrower forms of the goals previously created. Borich describes them as a "global concept that are best made concrete by a divide and conquer strategy" (1985, p. 210). At this stage, goals will be divided and sub divided to be made into specific enough objectives to be acceptable to the organization. "Some goals will be unworkable, in which case they will be eliminated, even though they were legitimately derived from needs," (Maslow, 1985, p. 210).

After objectives have been created, strategies for delivering information and objectives to clients or producers are created (Borich, 1985). This step also includes the implementation of these strategies in the classroom, Extension, etc. However, not all objectives will fit the strategies chosen. The objectives will either be rewritten or discarded, or the strategies will be adjusted to fit the objectives. Adjusting objectives and strategies many times can cause objectives to be dropped because they don't fit the strategies chosen. "Strategies can be derived from objectives in ways that make the intended strategies incompatible with the needs, wants, and desires of the client group for whom the program is being developed," (Borich, 1985, p. 210). The final step would be to measure the outcomes of the strategies implemented.

This final step is important as the effects of the strategies in the program must be quantifiably measured to ascertain if the program has erased or reduced the needs shown in the first stage of the assessment (Borich, 1985). The entire purpose of a needs-assessment is to develop a program that fulfills the needs of the clients. Each step, as noted, has a way of deviating from the original needs of the producers. This final step determines the level of difference between what the organization was trying to develop and what was actually developed.

Is the current level of goat production information available to producers adequate for producers' self-actualization level of Maslow's Hierarchy of Needs? This study builds upon Borich's (1985) first judgment stage which is to assess the need by "translating physical and behavioral signs into needs," (p. 208). Solaiman (2010) stated the importance of conducting needs-based research to determine the perceived needs of goat producers on production information. Most needs-assessment studies are conducted to ascertain the success of a program and/or changes that should be made to that program (Borich, 1985). However, this study did not assess the production information changes over a period of time which is the traditional use for a needs assessment (Altchuld & Witkin, 1995). Reevaluating needs of current programs is a common practice to ensure that the needs of the clients or producers (Karbasioun, 2007; Ford, 1995) or if any new needs have arisen (Bowen, 1995; Trede, 2000).

Summary

This chapter provided a basic overview of the current information flow in the goat industry. It has described current production information and issues with the current data available. All of these point to the need for current, beneficial and reviewed information (Gipson, 2004), so that producers know that the information they are receiving is correct.

This chapter also delineated the current research within the goat industry. The research being done is not always applicable to all goat producers. Some research is regionally and climate based, which will not always transfer to other regions or climates (Tsukahara, 2011). Some similar research is very specific and might not be helpful to producers because it doesn't cover what they need in their production system.

Maslow's Hierarchy of Needs coupled with Borich's needs-assessment model is the most effective way to determine the level of goat production information needed by the producers. Analyzing if producers have already reached the self-actualization phase of Maslow's Hierarchy will show if any changes need to be made to the quality or quantity of information available to goat producers. This can be done by modifying Borich's first step in the needs-assessment, by reaching out to producers to determine information needs. Resulting research and education should be based on the needs of the producers, farmers and industry.

References

Altschuld, J. & Witkin, B. (1995). *Planning and Conducting Needs Assessments.* Thousand Oaks, CA: Sage Publications.

Borich, G. (1985). Needs assessment and the self-evaluating organization. *Studies in Educational Evaluation. 11*(2) 205-215. doi: 10.1016/0191-491X(85)90023-9

Bowen, B. & Thomson J. (1995). Distance education needs of agribusiness and professional agricultural associations. *Journal of Agricultural Education 36*(4), 18-25. doi: 10.5032/jae.1995.04018.

Campbell, J., Kenealy, D., Campbell, K. (2003). *Animal Sciences: The Biology, Care, and Production of Domestic Animals: 4th edition.* New York, NY: McGraw Hill.

Comer, M., Campbell, T., Edwards, K., & Hillison, J. (2006). *Cooperative Extension and the 1890 Land-Grant Institution: the real story. 44*(3), 3FEA4.

Food and Agriculture Organization Statistics Division. (2011). Food and Agriculture Organization of the United Nations. Rome, Italy. Retrieved from http://faostat3.fao.org/faostat-gateway/go/to/download/T/TP/E

Ford, C. (1995). Educational priorities of small farmers in West Tennessee. *Journal of Agricultural Education 36*(1), 31-37. doi: 10.5032/jae.1995.01031.

Gallet de St. Aurin, E. (2011). *I advocate for the mandatory inclusion of a goat/caprine curriculum in all land grant universities.* Unpublished manuscript, Department of Animal Science, Iowa State University, Ames, IA.

Gipson, T., et al. (2004). *Meat goat production handbook*. Langston, OK: Langston University.

Hall, D., Knight, T., Coble, K., Banquet, A., & Patrick, G. (2003). Analysis of beef producers' risk management perceptions and desire for further risk management education. *Faculty Publications: Agricultural Economics.* Paper 75. Retrieved from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1078&context=ageconfacpub

Herzberg, F., Mausner, B., & Snyderman, B. (1959). *The motivation to work.* New York, NY: John Wiley & Sons.

Hueston, W. (1990). The national animal health monitoring system: addressing animal health information needs in the U.S.A. *Preventative Veterinary Medicine*, *8*(2) 97-102.

Journal of Agricultural Education (JOAE). (2014). *Journal of Agricultural Education*. Retrieved from www.jae-online.org.

Journal of Animal Science (JAS). (2014). *Journal of Animal Science*. Retrieved from www.journalofanimalscience.org.

Journal of Extension (JOE). (2014). *Journal of Extension.* Retrieved from www.joe.org.

Karbasioun, M., Mulder, M., & Biemans, H. (2007). Course experiences and perceptions of farmers in Esfahan as a basis for a competency profile of Extension instructors. *Journal of Agricultural Education 48*(2), 79-91. doi: 10.5032/jae.2007.02079.

Langston University. (2014). *Goat Research: Meat Goat Production handbook.* Retrieved from http://www.luresext.edu/goats/mgph.html.

Maslow, A. (1943). A theory in human motivation. *Psychological Review 50*, 370-396. Retrieved from http://psychclassics.yorku.ca/Maslow/motivation.htm

Maslow, A. (1954). *Motivation and Personality.* New York, NY: Harper & Row.

Patrick, G., Peiter, A., Knight, T., Coble, K., & Banquet, A. (2007). Hog producers' risk management attitudes and desire for additional risk management education. Faculty publications: Agricultural Economics. Paper 73. http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1076&context=ageconfacpub&sei-redir=1&referer=http%3A%2F%2Fscholar.google.com%2Fscholar%3Fhl%3Den%26q%3Deducational%2Bneeds%2Bof%2Bbeef%2Bproducers%26btnG%3D%26as_sdt%3D1%252C16%26as_sdtp%3D#search=%22educational%20needs%20beef%20producers%22

Sahlu, T., et al. (2008). ASAS Centennial Paper: Impact of animal science research on United States goat production and predictions for the future. *Journal of Animal Science,* 87(1) 400-418. doi: 10.2527/jas.2008-1291

Sayer, M. (2010). *Storey's Guide to Raising Meat Goats.* North Adams, MA: Storey Publishing.

Smith, C. (2010). *Raising Goats for Dummies.* Hoboken, NJ: Wiley Publishing.

Solaiman, S. (2010). *Goat Science and Production.* Ames, IA: Blackwell Publishing.

Tsukahara, Y., Oishi, K., & Hirooka, H. (2009). Development and application of a crossbreeding simulation model for goat production systems in tropical regions. *Journal of Animal Science, 89*(12) 3890-3907. doi: 10.2527/jas.2011-3997.

Trede, L. & Witaker, S. (2000). Educational needs and perceptions of Iowa beginning farmers toward their education. *Journal of Agricultural Education 41*(1), 39-48. doi: 10.5032/jae.2000.01039.

Tucker, Y. (2012). *The Meat Goat Handbook: Raising Goats for Food, Profit, and Fun.* London, England: Voyageur Press.

United States Department of Agriculture. (2005). The Goat Industry: Structure, Concentration, Demand and Growth. Retrieved from http://www.aphis.usda.gov/animal_health/emergingissues/downloads/goatreport090805.pdf

United States Department of Agriculture. (2011). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. January 28, 2011. Retrieved from http://usda01.library.cornell.edu/usda/nass/SheeGoat//2010s/2011/SheeGoat-01-28-2011_new_format.pdf

United States Department of Agriculture. (2014). Sheep and Goats. NASS, Agricultural Statistics Board. Washington, DC. January 31, 2014. Retrieved from http://usda01.library.cornell.edu/usda/current/SheeGoat/SheeGoat-01-31-2014.pdf

Vergot, P., Israel, G., & Mayo, D. (2005). Sources and channels of information used by beef cattle producers in 12 counties of the Northwest Florida Extension district. *Journal of Extension, 43*(2), 2RIB6.

Whitley, N., Cazac, D., Rude, B., Jackson-O'Brien, D. & Parveen, S. (2008). Use of commercial probiotic supplement in meat goats. *Journal of Animal Science*, 87(2) 723-728. doi: 10.2527/jas.2008-1031

Wingenbach, G. (2013). Using the Borich Needs Assessment Model to Prioritize Competencies for Training and Development Programs. Texas A&M University. Retrieved from http://www.lamolina.edu.pe/innovacioneducativa/images/files/innovacion2013/Conferencias/Gary%20Wingenbach%20Uso%20del%20modelo%20Borich%20para%20identificar%20y%20priorizar%20competencias.pdf

CHAPTER III. METHODOLOGY

The purpose of this study was to determine the perceived production information needs of American Boer Goat Association (ABGA) members. To do this, this study sought to report demographics of ABGA members in the Midwestern United States; as well as members' level of knowledge in regards to the goat industry. It also sought to analyze the barriers that are limiting producers' operations; and determine the perceived level of adequacy regarding production information materials' quality and quantity used in the industry. Perceived level of preference for delivery/method and level of production information materials used in the industry currently and what goat producers would like to see in the future was collected. Lastly, production categories in which goat producers wished to see research was detailed. In this study, production information and research needs, as well as demographics, were identified using a web-based questionnaire. This chapter identifies the population as well as illustrates both the study and survey instrument in detail.

Descriptive Survey

This research was designed to determine perceived educational needs of American Boer Goat Association members in the Midwest. Descriptive research uses surveys to "ask questions about peoples' beliefs, opinions, characteristics, and behavior" (Ary, Jacobs, Sorensen, & Razavieh, 2010, p. 372). A descriptive research model was utilized because no similar research could be found that concentrated solely on the production information needs of goat producers.

In order to achieve this descriptive information a modification was made to Borich's (1985) needs assessment's first step. Instead of clients, or in this case goat producers, bringing their needs to the researchers, a survey was sent out to achieve the same outcome, which was defining the needs of the respondents. This study was not designed to be a needs assessment as

described by McCawley (2009) or Borich (1985); it was simply designed to describe currently perceived production information needs of goat producers. It was accomplished by requesting respondents to answer questions pertaining to their particular goat production information needs.

Population, Sampling Frame, and Sample Design

This study was utilized to identify the perceptions of meat goat, specifically Boer goat, producers regarding current and future production information used and required for successful production. The target population was defined as Boer goat producers in the Midwestern United States. A random sample (Ary, Jacobs, Sorensen, & Razavieh, 2010) of American Boer Goat Association (ABGA) members was drawn from the Midwestern States as defined by United States Department of Agriculture National Institute of Food and Agriculture (NIFA). These states included: North Dakota, South Dakota, Nebraska, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio. Members were chosen for a population basis because of their assumed higher involvement in the goat industry. It is understood if individuals are willing to be members and pay dues to organizations, then the individuals hold higher stakes in their industry, in comparison to nonmembers, and would be highly interested in the information provided for the industry.

A survey is a "study of a sample to research the incidence and distribution of variables" (Ary, Jacobs, Sorensen, & Razavieh, 2010, p. 651). In order to determine sample size, the population size, confidence interval, confidence level, and standard deviation were taken into account (Smith, 2013). The chosen confidence interval was +/- .05, the confidence level was 95% (which had an accompanying z-score of 1.96), and the standard deviation was .5, and utilized an initial population of 944 ABGA members in the Midwest (ABGA, 2014). With this information the sample size was determined to be 273 surveys needed. To compensate for

possible nonresponse (Ary, Jacobs, Sorensen, & Razavieh, 2010), an oversampling of 300 participants were randomly selected from the population. The list of ABGA members in the Midwest was retrieved from the ABGA website (ABGA, 2014) and a random sample of 300 individuals was taken for the purposes of this survey. The ABGA was apprised of the research being undertaken, and the respondents' contact information was retrieved from an online public source.

The survey duration was three weeks. Of the 300 surveys distributed, 90 were returned completed, which gave a response rate of 30%. There were 36 responses the first week which were categorized as early respondents. The 54 responses that were received over the following two weeks were considered late respondents (Linder, Murphy, & Briers, 2001). After conducting an independent t-test it was determined that there was no significant difference between early and late respondents in any of the demographics. Therefore, all data was reported together.

Survey Mode

It was determined that an Internet-based questionnaire was the most appropriate mode of data collection. Internet surveys are quicker and easier to distribute, and are less expensive than mail surveys (Ary, Jacobs, Sorensen, & Razavieh, 2010). Internet surveys also deliver a more accurate response than face-to-face interviews or phone interviews (Torangeau, Rips, & Rasinski, 2000).

A major concern with online surveys is the response rate which tends to be lower than other survey methods (Groves, Fowler, Couper, Lepkowski, Singer, & Tourangeau, 2009). Paper based surveys, including mailed surveys, tend to produce higher response rates (Groves et al., 2009). This issue was addressed by utilizing a larger sample size than required to account for a potentially high non-response rate. If more surveys are sent out then are required, there is a

higher likelihood that the researchers will receive the number of surveys needed (Ary et al., 2010). An Internet-based survey depends on individuals having online access; thus, the sample is restricted to those individuals with access to the Internet and the knowledge of how to use it.

Internet surveys also give the respondents freedom to complete the survey at any point in their day which can both benefit and hinder data collection (Dillman, 2009). It benefits the survey takers because the individual does not feel rushed and is more likely to give accurate responses. However, because the individuals can take the survey whenever they want they can easily become non-respondents, forgetting about the survey altogether or accidentally deleting it which becomes an issue with data collection.

When conducting a survey's timing, data collection and processing are very important (Dillman, 2009). Internet based surveys tend to do well in these areas because of online survey software systems. Qualtrics® online survey and statistical analysis software allows for a timely creation of the survey, send-out, as well as collection and processing of the data (Qualtrics, 2014). Qualtrics® was the software used in the creation, distribution, data collection and processing of this study.

Survey Development and Design

The instrument (Appendix A) was a researcher-developed survey composed of 35 Likert-scaled, simple scaled (Ary, Jacobs, Sorensen, & Razavieh, 2010), and open-ended questions. The survey measured the perceived educational needs of the producers in the goat industry. Demographics were also determined to report back to the organizations for use, since the demographics available were limited. Twenty-two of the questions focused on the perceived current educational attainment level of the producers and what the producers would prefer to see. Each construct was broken down into one to 14 categories which included statements that

required respondents to identify their level of agreement on statements regarding goat production information. The remaining 13 questions focused on the demographics of the population of AGBA members in the Midwest. Survey distribution followed a modified Dillman's (2009) five step philosophy, the first and second steps were combined. In addition, the data collected was also analyzed and stored using Microsoft Excel® software and IBM-SPSS® Statistics 22.

Introduction

The introduction to the survey was a letter of invitation from the researchers, and thanking the individuals for participating in the survey. The introduction explained the background behind the questions in the survey, and the importance of their participation. The letter also reminded individuals that participation was strictly voluntary and that any question could be skipped if desired. The letter also reminded participants that their information was strictly confidential and that only group information would be reported. It was also noted that the completed research would be available to them through both the American Boer Goat Association and personal email if requested.

Perceptions on Current Production information: Quality, Quantity, and Delivery

The first section of the survey was to determine the current perceptions of respondents to the current goat production information available. Respondents were asked to rate their level of belief on the current goat information available on four Likert scaled questions, with one, six, four, and six statements per question respectively (Ary, Jacobs, Sorensen, & Razavieh, 2010). These Likert scaled questions were to create a strong base for any need in production information that the individuals would like to see.

Individuals were also asked how they currently accessed their goat educational information by ranking the current use level of a list of resources and then stating if they would

like to use that resource in the future. This was to determine where producers accessed current information to determine if it correlated with where they wanted to get their information in the future. There was also one question related to marketing strategies in this section to discern how individuals are marketing their products.

Producers were also asked to respond to three qualitative questions regarding categories that they believed limited their production systems. They were able to describe limitations to their production system in an open-ended question. This data was later quantified by listing all categories mentioned and counting the times each was mentioned.

Perceptions on Future Production Information

Respondents were also asked to respond to what production information they were using currently, as well as what they would like to see in the future. These questions regarded specific topics in goat production including: nutrition, health, lactation, genetics, animal evaluation, functional anatomy, preferred management practices, meat production and quality, environmental enhancement, housing, marketing, and business planning. These questions were to determine the levels of information in these categories as well as the changes producers would like to see in these levels. There were also questions regarding to what extent information was being retrieved from certain outlets, books, websites, etc., and if respondents planned to utilize these outlets in the future.

This section also included two open-ended questions to determine additional information individuals wanted and where they thought research should be done in the goat industry. Respondents were asked what categories of information should be available, as well as what research should be done in the goat industry. The answers to these questions were then converted to quantitative data by counting the number of times a certain topic was identified.

Demographics

Demographics were collected in the last part of this survey. The demographics available from the ABGA were limited. By collecting sample data, the ABGA will be better equipped to understand the background of the associations' members. The demographics sought in this study included: gender, age, state, ethnicity, education level, if land is owned or rented, gross income of farm, and amount of land on farm.

Rights and Welfare of Participants

When conducting research using humans, it is important that none of their rights are impeded in any way (Ary, Jacobs, Sorensen, & Razavieh, 2010). No questions were asked that would make the individuals taking the survey uncomfortable or impeded their rights. Before research could commence permission was granted by the Institutional Review Board (IRB) at Iowa State University (Appendix B). They acted as a third party to verify that the individuals taking this survey would not be harmed or their rights impeded. The survey responses were also kept anonymous to give added protection to the respondents. Only group data was reported in this study.

Survey Validity

Ary, Jacobs Sorensen and Razavieh (2010) noted common problems that researchers encounter while utilizing surveys in research. One issue that arises is user error, meaning the user does not understand the survey so the data can be lost. Respondents can have issues with comprehension, retrieval and reporting as well (Groves, Fowler, Couper, Lepkowski, Singer, & Tourangeau, 2009). A panel of experts therefore was utilized to help the researchers determine if there were any issues with the survey before the pilot study was distributed. The instrument was reviewed by a professor in the Agricultural Education and Studies department at Iowa State

University, a statistician, the president of the Iowa Meat Goat Association and one other member of the ABGA. No panel members saw any issues with the instrument that needed to be changed.

A pilot study was then utilized to see if there were any specific problems with the survey when it was sent to respondents. User error was also addressed by utilizing a pilot study to see where the issues were going to arise. There were no adjustments suggested to the body of the survey. The only suggestions were to make the letters attached to the survey less monotone, and to offer a reward to those who took the survey, both suggestions were followed.

Validity is the extent to which an instrument measures what it claimed to measure (Ary , Jacobs, Sorensen, & Razavieh, 2010). Utilizing a pilot study tests the validity of an instrument and allows for any issues to be resolved before it is sent out to the population sample, and face validity was determined by the panel of experts. The pilot study was administered to 30 individuals, which was the recommended 10% of the sample size (Simon, 2011), but returned with only 5 respondents. The non-respondents were then called, only 4 additional individuals responded to the survey (Linder, 2001). This brought the pilot study respondents up to 9 which gave the pilot study a 30% response rate. No significant statistical differences were noted between respondents and non-respondents when an independent t-test was run utilizing SPSS®. Also, no technical issues, such as links that didn't work or survey questions not working, with the survey itself were brought to the attention of the researchers by the respondents during the pilot study. Some suggestions for the survey were given via an open-ended question at the end of the survey by respondents to the pilot study; some editorial suggestions were implemented in the full study.

Data Collection- Survey Administration

Qualtrics® was used to distribute as well as collect the survey data upon completion by the participants. The survey was sent out according to a modified Dillman (2009) five step contact approach. The five contacts suggested were: a pre-notice letter; a questionnaire mailing, a thank you postcard, a replacement questionnaire or a different attempt at contacting non-respondents, and final contact (Dillman, 2009).

The first contact with the sampled individuals was a combination of the pre-notice letter and the first questionnaire mailing. This first contact informed the individuals of the project, the importance of the research, potential outcomes as well as how those outcomes could affect the members of the American Boer Goat Association. The letter also reminded the participants that the survey was totally voluntary and could be terminated at any time. It also gave them contact information for the IRB, Iowa State University, as well as the researchers' contact information. A brief introduction of the researcher was also given to make the email more inviting. This email also provided an embedded link to the survey. The reason behind combining the pre-notice letter and first questionnaire was to cut down on the number of emails sent out to individuals. This was suggested by the individuals who completed the pilot study. It was also suggested by the pilot study respondents that the emails be a little more personalized. An incentive was provided for those who participated in the survey. The incentive was a chance to receive a $50 Hoegger's Goat Supply gift card. This was suggested by the pilot study respondents as a way to increase the response rate of the survey.

The second email went out six days after the original email. This email contained the same letter from the first email, an embedded survey link, and a thank you to the individuals who had completed the survey. Six days after the second email was sent, a shorter email was sent to

the participants reminding and urging them to take part in the survey. This email also included a thank you to those who had participated and a link to the survey. Five days after that email, another email was sent out again to urge participation in the survey. This email was also to inform the individuals of the pending survey close date.

After the data was collected a thank you postcard was sent out to participants thanking them for their assistance.

Contact Mode	Date	Responses
Pre-Notification Email	Saturday, May 24th	36
Second Contact: Email	Friday, May 30th	20
Third Contact: Email	Wednesday, June 4th	15
Fourth Contact: Email	Monday, June 9th	9

Figure 2: Schedule of communication with participants

Post-Collection Data Processing

Qualtrics® was used to collect and process data from this study. SPSS® was also used to analyze the data. The main concentration of data processing was descriptive statistics. Early and late respondents were compared using an independent t-test on SPSS. This test was performed to determine if there was a difference between early and late respondents that could alter the results effect on the population. A t-test was also performed to determine if there was any difference between males' and females' responses.

Limitations

The major limitation of this study was that only ABGA members were surveyed. It would have been preferable to survey goat producers from all walks of life but it is impossible since there is no one association for all goat producers from which to retrieve contact information from. Another minor limitation is that the individuals taking part in the survey had to have an

email address to be contacted and take the survey. Therefore, researchers will only be able to generalize findings for ABGA members in the Midwest who have access to email accounts.

Summary

This study used a web-based questionnaire to determine the goat production information needs of American Boer Goat Association members in the Midwestern United States. The survey was distributed to a random sample of 300 members of the 944 ABGA members in the Midwest. The study was designed and distributed utilizing Qualtrics® software; it was analyzed using both Qualtrics® and IBM-SPSS® Statistics 22. The survey's validity was checked with both a panel of experts as well as a pilot study before the survey was distributed to the sample. The instrument was also approved by the Institutional Review Board.

References

American Boer Goat Association. (2014). American Boer Goat Association. Retrieved from http://www.abga.org/page.php?pageid=2

Ary, D., Jacobs, L., Sorensen, C., & Razavieh, A. (2010). *Introduction to Research in Education: 8th edition.* Belmont, CA: Wadsworth.

Borich, G. (1985). Needs assessment and the self-evaluating organization. *Studies in Educational Evaluation. 11,* 205-215.

Dillman, D. (2009). *Internet, Mail, and Mixed Mode Surveys: The Tailored Design Method.* New York, NY: John Wiley & Sons.

Groves, R., Fowler, F., Couper, M., Lepkowski, J., Singer, E., & Tourangeau, R. (2009). *Survey Methodology, 2nd Edition.* Hoboken, NJ: Wiley & Sons.

Linder, J., Murphy, T., & Briers, G. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education. 42*(4), 43-53.

McCawley, P. (2009). Methods for conducting an educational needs assessment: guidelines for cooperative Extension system professionals. University of Idaho Extension. Retrieved from http://www.cals.uidaho.edu/edcomm/pdf/bul/bul0870.pdf.

Simon, M. (2011). *Dissertation and scholarly research: Recipes for success.* Seattle, WA: Dissertation Success, LLC. Retrieved from http://dissertationrecipes.com/.

Smith, S. (2013). Determining sample size: How to ensure you get the correct sample size. Retrieved from http://www.qualtrics.com/blog/determining-sample-size/.

Torangeau, R., Rips, L., & Rasinski, K. (2000). *The psychology of survey response.* Cambridge, U.K.: Cambridge University Press.

Qualtrics. (2014). Qualtrics research suite. Retrieved from https://www.qualtrics.com/rs/#enterprise.

CHAPTER IV: RESULTS

This chapter reports the results from the study. Results from all sections of the survey, including the open-entry questions are reported. This chapter included respondents' answers about their perceived knowledge in the goat industry. Results from the three Likert scaled questions, about the quality and quantity of the production information available are reported. This section also provides the answers to the open-ended qualitative questions.

Objective 1

There were respondents from every age group, from 18 to over 65 years old. However, 45% (*n*= 36) of respondents were between the ages of 36 and 50; the second highest response in age group was the 51 to 65 year olds who took up scarcely over 27% (*n*=22). The majority of respondents, just above 96% (*n*=76), were white; only 4% (*n*=3) noted another ethnicity or preferred not to answer. The respondents had various levels of education, from less than high school to DVM degrees. Just over one quarter (*n*=20) of the respondents indicated that they had "some college" education, but this was closely followed by Bachelor's degree (24.1%, *n*=19), Associate's degree (21.5%, *n*=17), high school diploma/GED (13.9%, *n*=11), Master's degree (10.1%, *n*=8), Terminal degree (2.5%, *n*=2), and finally less than high school and DVM degree (both with 1.3%, *n*=1). Although all NIFA Midwestern states were sampled, no responses were received from North Dakota. Ohio had the most respondents (*n*=21) and South Dakota had the least with only 1 respondent. All demographic data can be found in Table 1.

Table 1

American Boer Goat Association Member Demographic Data for the Midwestern United States

		f	%
Gender (*n*=78)	Male	32	41
	Female	46	59
Age (*n*=79)	18-25	5	6.3
	26-35	9	11.3
	36-50	36	45.5
	51-65	21	26.5
	>65	8	10.1
Ethnicity (*n*=79)	American Indian/Native Alaskan	0	0
	Asian	0	0
	Black or African American	0	0
	Hispanic or Latino	0	0
	Native Hawaiian or Other Pacific Islander	0	0
	White	76	96.2
	Other	2	2.5
	Prefer not to answer	1	1.3
Education Level (*n*=78)	Less than high school	1	1.3
	High school diploma/GED	10	12.8
	Some college	20	25.6
	Associate's degree	17	21.8
	Bachelor's degree	19	24.3
	Master's degree	8	10.3
	Terminal degree	2	2.6
	DVM	1	1.3
Years Goat Experience (*n*=74)	<1	2	2.7
	1-5	23	31.1
	6-10	25	33.7
	11-20	21	28.4
	21-30	3	4.1
	30+	0	0
State of Residence (*n*=72)	North Dakota	0	0
	South Dakota	1	1.4
	Nebraska	4	5.5
	Kansas	5	6.9
	Missouri	10	13.9

Table 1 (cont.)

American Boer Goat Association Member Demographic Data for the Midwestern United States

		f	%
State of Residence (cont.)	Iowa	7	9.7
(*n*=72)	Minnesota	6	8.4
	Wisconsin	3	4.2
	Illinois	8	11.1
	Indiana	6	8.4
	Michigan	3	4.2
	Ohio	19	26.3
Number of Goats Owned (*n*=79)	1-10	2	2.5
	11-25	16	20.3
	26-50	35	44.3
	51-100	16	20.2
	100-200	6	7.6
	200+	4	5.1
Use of Goats Currently on Farm	Meat	75	95
(could choose more than one)	Milk	14	18
	Fiber	1	1
	Show	60	76
	Pets	18	23
	Brush Control	25	32
	Other	6	8
Rent or Own Land (*n*=78)	Own	75	94.9
	Rent	1	1.3
	Both	3	3.7
Number of Acres rented/owned	<10	18	23.6
(*n*=76)	10-49	30	39.4
	50-69	5	6.6
	70-99	3	3.9
	100-139	6	7.9
	140-179	3	3.9
	180-219	1	1.3
	220-259	1	1.3
	260-499	6	7.9
	500+	3	3.9
Gross Annual Farm Sales	<$10,000	44	57.9
(not just from goat sales)	$10,001- $24,999	19	25
(*n*=76)	$25,000- $49,999	4	5.3

Table 1 (cont.)

American Boer Goat Association Member Demographic Data for the Midwestern United States			
		f	%
Gross Annual Farm Sales (cont.) (not just from goat sales) (*n*=76)	$50,000- $99,999	6	7.9
	$100,000- $250,000	3	3.9
	>$250,000	0	0
Exhibit at local, state, regional, or national shows? (*n*=78)	Yes	61	78.2
	No	17	21.8

Most respondents indicated that they owned between 25 and 50 goats, and 44% (*n*= 35) of respondents fell into this category. There were 4 individuals (5%) that indicated that they owned over 200 goats; 3 individuals that owned between 1 and 10 goats; and the remainder of respondents fell in between. Goat usage on each farm varied and respondents were able to select as many uses as applied. The two highest percentages were 95% (*n*=75) of the goats were used for meat and 76% (*n*=60) of the goats were being used for exhibition purposes.

Forty-eight respondents, 63%, stated that they farmed less than 50 acres. A majority of respondents, 95% (*n*=75), indicated that they owned the land they used for farming and goat production, instead of renting. The farm sales for respondents, not just from goat sales, were mostly under $10,000, (*n*= 43, 55.8%), but there were 20 (26%) respondents who noted farm sales were between $10,000 and $24,999. There were even 3 respondents (3.9%) whose gross annual farm sales were between $100,000 and $250,000. The remaining respondents fell between the $25,000 and $99,999 for gross annual income.

Objective 2

The second objective sought to determine goat producers' level or knowledge regarding the goat industry. Over 80% (*n*=78) responded that they considered themselves either somewhat or very knowledgeable about the goat industry, see Table 2.

Table 2

Midwest ABGA member perceptions regarding goat industry knowledge (n=90)		
Level of Agreement	*f*	%
Not at all	0	0
Not Very Much	11	12.2
No Opinion	1	1.1
Somewhat	57	63.3
Very Much	21	23.3

And when asked to score their level of goat expertise, 0 being novice and 100 being expert, the average value given was 60.25; details are noted in Table 3.

Table 3

ABGA Midwest member perceptions regarding goat industry expertise (n=78)				
Answer	Min. Value	Max. Value	Mean	Std. Dev.
Expertise	0	100	60.25	21.5

Amount of time spent investigating goat information also gives a good indication of the level a producer's perceived knowledge, which are noted in Table 4. A higher percentage (*n*=27, 35.5%) of respondents spent between one and five hours per month investigating goat production information. However, there is still a fairly high percentage of goat producers that spent between six and ten hours per month (*n*=20, 26.3%), as well as those who spend between 11 and 20 hours (*n*=20, 26.3%) a month investigating goat production information.

Table 4

Time Midwest ABGA members spent investigating goat production information (n=76)		
Hours/month	*f*	%
0	1	1.3
<1	1	1.3
1-5	27	35.5
6-10	20	26.3
11-20	20	26.3
21-30	3	3.9
31+	3	3.9

The respondents were then asked to indicate if they felt that goat producers had adequate information available for them to succeed in the goat industry. Seventy-three respondents (81.1%) disagreed, indicating that they did not believe there was adequate information available. Table 5 displays the frequencies and percentages of respondents.

Table 5

Midwest ABGA member perceptions on adequacy of information available to the goat industry (n=90)		
	f	%
Yes	17	18.9
No	73	81.1

Objective 3

The third objective was to determine what barriers were limiting the production systems of ABGA members in the Midwest. Researchers and educators, according to Solaiman's (2010) philosophy, should investigate the needs of producers to determine their perceived limitations to their particular production system. This concept helped to develop the next open-ended question. Individuals were able to mention as many limiting factors to their production systems as they

wanted. Categories were compiled by the researchers and tallies were taken for each mention of a barrier. The results showed that the barrier with highest mention of limitation was health (f=30, 45.4%), followed by nutrition (f=18, 27.3%), marketing (f=17, 25.8%) and management practices (f=11, 16.7%), see Table 6. The categories with the lowest mention included: estimated breeding values (EBV), culling, 4-H, evaluation, milk production, reproduction, meat production and quality, kid rearing, and all categories; each of these categories had two mentions (f=2, 3%).

Table 6

Barriers limiting goat production systems for ABGA members in the Midwest (n=66)

Categories	*f*	%
Health	30	45.4%
Nutrition	18	27.3%
Marketing	17	25.8%
Management Practices	11	16.7%
Genetics	10	15.2%
Parasites	6	9.1%
Veterinarian	6	9.1%
Medication	5	7.6%
Housing	3	4.5%
Commercial Goat Production Information	3	4.5%
Public Opinion	3	4.5%
Estimated Breeding Values (EBV)	2	3%
Culling	2	3%
4-H	2	3%
Evaluation	2	3%
Milk Production	2	3%
Reproduction	2	3%
Meat Production and Quality	2	3%
Kid Rearing	2	3%

Note: Responses were greater than n=66. Respondents were able to identify as many barriers as they felt were applicable. Also there was one individual that noted that all categories were barriers, therefore one was added to all categories.

Objective 4

Producers were asked their opinions about quality and quantity of goat production information available. A series of Likert-scaled statements was provided and respondents indicated whether they strongly disagreed, disagreed, were neutral, agreed or strongly agreed with the statement.

Table 7 describes the attitudes of respondents about the quality of goat production information available. Nearly 66% (*n*=59) of respondents agreed or strongly agreed that the quality of education in the goat industry is severely lacking. A majority of respondents, 58% (*n*=51), either agreed or strongly agreed that there are specific areas in the goat industry that have adequate information, with just a few areas needing improvement. When asked if the quality of education in the goat industry was adequate just over 66% (*n*=58) either disagreed or strongly disagreed with that statement. Over 77% (*n*=68) of respondents either disagreed or strongly disagreed with the statement that the education in the meat goat industry is adequate.

Table 7

Midwest ABGA member perceptions on the quality of education in the goat industry

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
The quality of education in the goat industry is severely lacking	89	2	2.2	14	15.7	14	15.7	46	51.7	13	14.6
There are specific areas in the goat industry that have plenty of information, but a few areas need improvement	87	3	3.4	21	24.1	12	13.8	49	56.3	2	2.3
The quality of education in the goat industry is adequate	88	14	15.9	44	49.4	15	17.0	14	15.9	1	1.1
The education in the meat goat industry is adequate	88	12	13.6	56	63.6	12	13.6	8	9.1	0	0

Just over 80% (*n*=70) of respondents either disagreed or strongly disagreed when asked if the quantity of education was adequate for producers to achieve success in the production of goats. Table 8 reports producers' perceptions of the quantity of educational information available for the industry. And when asked if the quantity of education was just enough for the industry to succeed, over 50% (*n*=52) either disagreed or strongly disagreed.

However, when asked their level of agreement on the concept that there are some areas where the quantity of information is lacking, there were over 80% (*n*=71) of individuals that either agreed or strongly agreed, see Table 8. When asked if the quantity of education was severely lacking 54% (*n*=47) of respondents agreed or strongly agreed.

Table 8

Midwest ABGA member perceptions on the quantity of education in the goat industry.

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
The quantity of education is more than enough for the goat industry to succeed with	87	16	18.4	54	62.1	11	12.6	6	6.9	0	0
The quantity of education is just enough for the goat industry to succeed with	87	10	11.5	42	48.3	22	25.3	13	14.9	0	0
There are some areas where the quantity of information is lacking for the goat industry to succeed with	88	3	3.4	9	10.2	5	5.7	65	73.9	6	6.8
The quantity of education in the goat industry is severely lacking for the goat industry to succeed with	87	2	2.3	18	20.7	20	23	36	41.4	11	12.6

Producers were also asked to rank, on a scale of zero to ten, the quantity of information to which they currently had access for 12 different information categories. Zero being no information at all, and ten being all information in that category. These categories included: nutrition, health, lactation, genetics, animal evaluation, functional anatomy, preferred management practices, meat production and quality, environmental enhancement, housing, marketing and business plans. Respondents were also asked to rank how much more or less information they wanted on each category. Zero, for this section meant they had no opinion on

that specific category. One meant they wanted much less information and ten meant they wanted much more information in that category.

Goat health was marked the highest for causing system limitations, and it is reflected in this question as well. Most respondents (67.5%, *n*=56) marked between a three and a five for current information and indicated a value higher than a five in future needs (90.3%, *n*=61). Current lactation information had its highest frequency at a level of three, and its highest frequency in future needs at a level of five; therefore, respondents would want about the same quantity of information. Table 9 indicates the current information ABGA members in the Midwest have, and their future desires for nutrition, health and lactation

Table 9

Midwest ABGA member perceptions regarding the quantity of information needed for nutrition, health, and lactation information to successfully compete in the goat industry. (n=83)

Qty. of Info	Categories of Production Information											
	Nutrition				Health				Lactation			
	Current		Future		Current		Future		Current		Future	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
0	2	2.4	4	4.9	0	0	3	3.7	6	7.2	11	13.4
1	2	2.4	0	0	4	4.8	0	0	11	12.2	0	0
2	4	4.8	0	0	4	4.8	0	0	11	12.2	1	1.2
3	39	47	0	0	25	30.1	2	2.4	24	28.9	3	3.7
4	11	13.3	0	0	17	20.5	0	0	15	18.1	4	4.9
5	8	9.6	9	11	14	16.9	3	3.7	10	12	18	22
6	9	10.8	13	15.9	8	9.6	5	6.1	3	3.6	15	18.3
7	6	7.2	13	15.9	6	7.2	13	15.9	0	0	11	13.4
8	1	1.2	19	23.2	4	4.8	20	24.4	3	3.6	9	11
9	0	0	10	12.2	0	0	13	15.9	0	0	3	3.7
10	1	1.2	14	17.1	1	1.2	23	28	0	0	7	8.5

Note: for Current 0= has no information and 10 = has all information in that category; for Future 0= doesn't care about category, 1= much less information wanted, 5= the same amount of information wanted, and 10= much more information wanted.

Genetics, animal evaluation, and functional anatomy all displayed low current information, and a high desire for future information, much like the other categories, see Table 10. Unlike the some of the other categories the differences between current information and desired information was a more moderate increase rather than a large change.

Table 10

Midwest ABGA member perceptions regarding the amount of information needed for genetics, animal evaluation, and functional anatomy information to successfully compete in the goat industry. (n=83)

Qty. of Info	Categories of Production Information											
	Genetics				Animal Evaluation				Functional Anatomy			
	Current		Future		Current		Future		Current		Future	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
0	4	4.8	4	4.9	2	2.4	5	6.1	0	0	8	9.8
1	6	7.2	0	0	5	6	0	0	4	4.8	0	0
2	15	18.1	0	0	8	9.6	0	0	9	10.8	1	1.2
3	17	20.5	1	1.2	21	25.3	1	1.2	17	20.5	3	3.7
4	15	18.1	2	2.4	16	19.3	1	1.2	11	13.3	1	1.2
5	13	15.7	12	14.6	10	12	11	13.4	18	21.7	22	26.8
6	7	8.4	9	11	8	9.6	13	15.9	7	8.4	10	12.2
7	2	2.4	17	20.7	7	8.4	14	17.1	4	4.8	11	13.4
8	2	2.4	12	14.6	0	0	19	23.2	3	3.6	13	15.9
9	2	2.4	9	11	1	1.2	8	9.8	4	4.8	4	4.9
10	0	0.0	16	19.5	5	6	10	12.2	5	7.2	9	11

Note: for Current 0= has no information and 10 = has all information in that category; for Future 0= doesn't care about category, 1= much less information wanted, 5= the same amount of information wanted, and 10= much more information wanted.

Preferred management practices, meat production and quality, and environmental enhancement all showed a significant difference between current production information availability, and future desires for production information. The majority of current information is below five and the future desires is a six or above.

Table 11

Midwest ABGA member perceptions regarding the amount of information needed for preferred management practices, meat production and quality, and environmental enhancement information to successfully compete in the goat industry. (n=83)

Qty. of Info	Categories of Production Information											
	Preferred Management Practices				Meat Production and Quality				Environmental Enhancement			
	Current		Future		Current		Future		Current		Future	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
0	5	6	4	4.9	4	4.8	2	2.5	13	15.7	8	9.8
1	2	2.4	0	0.0	9	10.8	0	0	16	19.3	0	0
2	13	15.7	1	1.2	18	21.7	0	0	20	24.1	0	0
3	22	26.5	1	1.2	15	18.1	1	1.2	15	18.1	1	1.2
4	13	15.7	0	0.0	10	12	0	0	11	13.3	4	4.9
5	15	18.1	7	8.5	11	13.3	7	8.6	3	3.6	13	15.9
6	3	3.6	11	13.4	3	3.6	7	8.6	3	3.6	18	22
7	4	4.8	13	15.9	9	10.8	11	13.6	0	0	11	13.4
8	3	3.6	17	20.7	1	1.2	15	18.5	1	1.2	8	9.8
9	1	1.2	14	17.1	1	1.2	15	18.5	1	1.2	9	11
10	2	2.4	14	17.1	2	2.4	23	28.4	0	0	10	12.2

Note: for Current 0= has no information and 10 = has all information in that category; for Future 0= doesn't care about category, 1= much less information wanted, 5= the same amount of information wanted, and 10= much more information wanted.

Marketing, followed by health, meat production and quality, and nutrition, had the highest percentage of respondents that wanted more information in these categories. This was specified by respondents who marked a score of 6 or higher on the future needs. Marketing information had over 95% (*n*=73) of respondents mark a 6 or above, see Table 12.

Table 12

Midwest ABGA member perceptions regarding the amount of information needed for housing, marketing, and business plan information to successfully compete in the goat industry. (n=83)

Qty. of Info	Categories of Production Information											
	Housing				Marketing				Business Plan			
	Current		Future		Current		Future		Current		Future	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
0	2	2.4	9	11	11	13.3	9	3.7	15	18.1	5	6.1
1	4	4.8	3	3.7	16	19.3	0	0	19	22.9	1	1.2
2	9	10.8	1	1.2	14	16.9	0	0	9	10.8	1	1.2
3	12	14.5	1	1.2	13	15.7	1	1.2	10	12	1	1.2
4	11	13.3	1	1.2	9	10.8	0	0	7	8.4	2	2.4
5	18	21.7	25	30.5	14	16.9	5	6.1	10	12	10	12.2
6	11	13.3	8	9.8	2	2.4	4	4.9	5	6	13	15.9
7	5	6	17	20.7	1	1.2	9	11	3	3.6	7	8.5
8	5	6	7	8.5	1	1.2	22	26.8	1	1.2	12	14.6
9	3	3.6	1	1.2	2	2.4	10	12.2	1	1.2	9	11
10	3	3.6	9	11	0	0	28	34.1	3	3.6	21	25.6

Note: for Current 0= has no information and 10 = has all information in that category; for Future 0= doesn't care about category, 1= much less information wanted, 5= the same amount of information wanted, and 10= much more information wanted.

Producers were asked what additional production information they believed should be available; producers were able to report as many categories that they believed were applicable. The process for developing this list was the same as for the factors limiting production systems, see Table 13. Again, health was the topic with the most responses (*f*= 16) and marketing came in with the second highest (*f=13)*. Following those, medication/vaccines and genetics, management, and parasites, all were fairly close in number of mentions.

Table 13

Production information that Midwest ABGA members believe should be available (n=52)

Category	*f* (%)	%
Health	16	30.7%
Marketing	13	25%
Medication/Vaccines	8	15.4%
Genetics	8	15.4%
Management	7	13.5%
Parasites	6	11.5%
Nutrition	5	9.6%
Carcass Data	5	9.6%
Estimated Breeding Values (EBV)	4	7.7%
Vets	4	7.7%
Specific Diseases	3	5.8%
4H information	3	5.8%
Evaluation	3	5.8%
Commercial vs Show	3	5.8%
Reproduction	3	5.8%
Herd Improvement	2	3.8%
Holistic Practices	2	3.8%
Sire Evaluation	2	3.8%
Subscriptions to Overseas Programs	2	3.8%
Public Opinion	2	3.8%
Skin Pigmentation	2	3.8%
Milk Yields	2	3.8%
Hoof Care	2	3.8%
State Specific information	2	3.8%
Business Planning	2	3.8%
Forages	2	3.8%

Note: Responses were greater than n=52. Respondents were able to identify as many barriers as they felt were applicable. Also there was one individual that noted that all categories were barriers, therefore one was added to all categories.

Objective 5

The fifth objective was to determine goat producers' perceived level of preference for delivery/method and level of production information materials used in the industry currently, and what they would like to see in the future. To cover all areas of education, the resources that producers are using must also be analyzed, see Table 14. A majority of respondents, 59.7% (*n*=52), stated that there are educational materials available but they do not fulfill their needs. Also, just over 64% (*n*=57) of respondents either strongly disagreed or disagreed with the statement that they have enough educational materials for their needs.

Table 14

Midwest ABGA members' perceptions on educational materials available on goats and the goat industry.

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
There are educational materials available but they do not fulfill my needs	87	2	2.3	17	19.5	16	18.4	47	54	5	5.7
There are enough educational materials for my needs	88	8	9.1	49	55.7	13	14.8	18	20.5	0	0

Producers were asked to rank, on a scale of zero to ten, the amount of time they spent accessing goat information using 11 different resources. If a respondent ranked a category with a zero it indicates that they never utilized the resource; and if 10 was indicated the resource was used frequently. These categories included: Internet/websites, university classes, Extension, veterinarian, books, lectures, expositions, pamphlets, social media, workshops, and other producers. Results show that 39% (*n*=32) use Internet/websites as their main resource for goat information, ranking their usage of internet/websites as a 10. Table 15 displays the respondents' frequency of use of selected goat production resources for Internet/websites, university classes, extension, veterinarian, and books.

Table 15

Current use of Internet/websites, university classes, Extension, veterinarian, and books as resources for goat production information by Midwest ABGA members. (n=82)

Rank of Usage	I./W		U.C.		Ext.		Vet.		B.	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
0	1	1.2	29	35.4	19	23.2	8	9.8	6	7.3
1	0	0	25	30.5	12	14.6	1	1.2	2	2.4
2	0	0	3	3.7	5	6.1	4	4.9	2	2.4
3	2	2.4	9	11	16	19.5	12	14.6	6	7.3
4	1	1.2	1	1.2	3	3.7	3	3.7	7	8.5
5	4	4.9	7	8.5	16	19.5	13	15.9	16	19.5
6	2	2.4	4	4.9	2	2.4	8	9.8	10	12.2
7	17	20.7	3	3.7	6	7.3	15	18.3	14	17.1
8	10	12.2	0	0	1	1.2	9	11	11	13.4
9	13	15.9	0	0	0	0	5	6.1	4	4.9
10	32	39	1	1.2	2	2.4	4	4.9	4	4.9

Note: 0= not utilizing as resource and 10= always utilizing as a resource. I./W.=Internet/websites, U.C.=university classes, Ext.=Extension, Vet.= veterinarian, and B.=books.

Social media was second most common resource, with 13.4% (*n*=11) ranking their current resource usage as a 10. The third highest resource for respondents was other producers (8.5%, *n*=7). Table 16 displays the respondents' frequency of use of selected goat production resources for lectures, expositions, pamphlets, social media, workshops, and other producers.

Table 16

Current use of lectures, expositions, pamphlets, social media, workshops, and other producers as resources for goat production information by Midwest ABGA members. (n=82)

Rank of Usage	L.		Exp.		P.		S.M.		W.		O.P.	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
0	23	28	24	29.3	19	23.2	9	11	21	25.6	11	13.4
1	14	17.1	17	20.7	9	11	6	7.3	15	18.3	0	0
2	10	12.2	3	3.7	9	11	6	7.3	6	7.3	3	3.7
3	7	8.5	8	9.8	8	9.8	8	9.8	10	12.2	2	2.4
4	3	3.7	6	7.3	8	9.8	6	7.3	1	1.2	4	4.9
5	14	17.1	15	18.3	12	14.6	9	11	13	15.9	8	9.8
6	4	4.9	6	7.3	4	4.9	5	6.1	3	3.7	5	6.1
7	5	6.1	2	2.4	6	7.3	10	12.2	7	8.5	14	17.1
8	1	1.2	1	1.2	2	2.4	8	9.8	4	4.9	21	25.6
9	1	1.2	0	0	2	2.4	4	4.9	2	2.4	7	8.5
10	0	0	0	0	3	3.7	11	13.4	0	0	7	8.5

Note: 0= not utilizing as resource and 10= always utilizing as a resource. L.=lectures, Exp.=expositions, P.= pamphlets, S.M.=social media, W.=workshops, and O.P.=other producers.

Producers were then asked if they planned to use each resource in the future. Internet/website use again ranked number one for usage, 94% (*n*=77) of respondents planning to use it in the future. Table 17 displays the intended future usage for Internet/websites, university classes, extension, veterinarian, books, and lectures as goat production information resources.

Table 17

Intended use of Internet/websites, university classes, Extension, veterinarian, books, and lectures as future resources for goat production information by Midwest ABGA members. (n=82)

	Internet/ Websites		University Classes		Extension		Veterinarian		Books		Lectures	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
Doesn't plan on using	5	6	48	58.5	24	29.2	25	30.4	33	40.2	53	64.6
Would like to use	77	94	34	41.5	58	70.8	56	69.6	49	59.8	29	35.4

The intended future usage for expositions, pamphlets, social media, workshops, and other producers as goat production information resources is displayed in Table 18. Lectures, expositions, university classes, social media, and pamphlets had the highest likelihood of not being used in the future. More than 50% responded that they did not plan on using it in the future. The usage of other producers as a resource did increase to a higher intended usage, see Table 18, as did utilizing Internet, as indicated in Table 17.

Table 18

Intended use of expositions, pamphlets, social media, workshops, and other producers as future resources for goat production information by Midwest ABGA members. (n=82)

	Expositions		Pamphlets		Social Media		Workshops		Other Producers	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Doesn't plan on using	49	59.7	47	57.3	42	51.2	36	43.9	32	39
Would like to use	33	40.3	35	42.7	40	48.8	46	56.1	50	61

Objective 6

Producers were also asked in what areas they believed there should be additional research. Again, health took the top spot, followed by medicines/vaccines, parasites, nutrition, and specific diseases. Table 19 displays the list of research categories suggested by the respondents, open-ended responses can be found in Appendix D.

Table 19

Midwest ABGA member suggested future research (n=69)

Category	*f*	*f* (%)
Health	28	40.5%
Medicines/Vaccines	22	31.9%
Parasites	15	21.7%
Nutrition	14	20.3%
Specific Diseases	14	20.3%
Genetics	13	18.8%
Management	8	11.6%
Meat production	7	10.1%
Reproduction	7	10.1%
Marketing	7	10.1%
State specific/climate specific	7	10.1%
Public opinion of goat meat	6	8.7%
Small herd production vs larger operations	6	8.7%
Advanced Breeding Techniques (AI, Embryo Transfer, etc.)	5	7.2%
Estimated Breeding Values (EBV)	5	7.2%
Animal Evaluation	5	7.2%
EPDs	5	7.2%
Exercise for Animals	5	7.2%
Brush control	5	7.2%
Flushing	5	7.2%
Growing Hair	5	7.2%
Hoof care	5	7.2%
Grazing vs Grain fed	5	7.2%
Feed conversion	5	7.2%
Performance	5	7.2%
Growth	5	7.2%
USDA research	5	7.2%

Note: Responses were greater than n=69. Respondents were able to identify as many barriers as they felt were applicable. Also there were four individuals that noted that all categories were barriers; therefore one was added to all categories.

Summary

This chapter reported the results from the survey. Over 50% of respondents believe they are somewhat or very knowledgeable about the goat industry. The collected data also show a strong agreement among producers that there is a lack of information in the goat industry. Marketing information was indicated to be the most desired information category suggested by the researcher. Health, however, ranked first in the information that producers believe should be available as well as in research that respondents believe should be performed.

CHAPTER V: CONCLUSIONS BASED ON MAJOR FINDINGS, IMPLICATIONS, RECOMMENDATIONS, FUTURE RESEARCH SUGGESTIONS, AND SUMMARY

The purpose of this chapter is to give conclusions based on the results of the survey. The implications for the industry as well as invested parties such as Extension, universities, businesses, and associations will be addressed. Also recommendations and suggested future research will be described.

Conclusions Based on Major Findings

Technology and innovations are made in livestock agriculture regularly. With the increasing popularity of the goat industry in the United States, it is imperative that producers are given enough information to properly care for their animals, as well as be profitable in their respective sectors, namely meat, milk, and fiber (Solaiman, 2010). By educating producers about their products and marketing techniques, they will be able to ensure the proper care and health of their goats and thereby, continue the delivery of an exceptional product to the consumer. They will then be able to educate the public about their products. Maslow (1943) suggests that until an individual has achieved a need he will continue to pursue it. The self-actualization of discovering new and better ways of producing goats and their products will be a continuing struggle until the production information that producers want and need is found. By assisting them in their search for goat production information, they are being assisted in satiating their self-actualization needs.

Objective 1

The first objective was to report demographics of American Boer Goat Association members in the Midwestern United States. No current demographics were available from the ABGA (2014). According to survey results, there was a fairly even distribution between men and women, so raising goats is not a gender specific activity. There was a variation in the age of

respondents, but most respondents were between 36 and 65 years of age. The highest percentage of respondents noted that they had between 26 and 50 goats, but the number of goats ranged from one to over 200 goats. This means that respondents ranged from the goat hobbyist, only having a few goats, to commercial production systems. The goats on the respondents' farms also had a variety of uses; the most frequent being for meat and show. This is not surprising, not only because the Boer goat is a meat breed but because the ABGA tends to concentrate a lot on the show industry hosting shows annually (ABGA, 2014). Also, most farm land was owned by the respondents and the majority of respondents made less than $10,000 in gross annual farm sales, and the property acres are less than 50. This indicates that the respondents are not wholly concentrating on their farm systems and may have jobs off the farm.

Midwest ABGA members tend to be white. This is interesting since, as previously stated, goat meat is not a common dish for Americans, but is very common with immigrants (USDA, 2005). From this data, we can conclude that the average ABGA member in the Midwest who responded to this study is a white, middle aged adult that owns less than 50 acres of land that they have between 26 to 50 goats, and their farm makes less than $10,000 annually. This information should give Extension, university, business, and association personnel general information as to whom they should be directing goat information within the Midwest.

Objective 2

A majority of respondents to this study believed that they are somewhat or very knowledgeable about the goat industry. The average level of expertise producers' states of themselves was above 50, out of 100. The conclusion from this objective is that although a majority of producers felt objectively knowledgeable about goats and their industry they still

believe there is more information that they do not yet possess, and that they desire to learn to improve their production systems.

Objective 3

The third objective was to determine production information categories which are perceived barriers that limit goat producers' operations. Special attention should be given to categories that limit the production systems of producers. Health, nutrition and marketing were the most frequently mentioned limiting factors to production systems. This leads to the conclusion that the information available, in the categories listed by the respondents, are not assisting the respondents with their production systems. Either the quality, relevance to their production systems, or quantity is not what it should be to assist producers with their production systems, it needs to be determined which before the production information can be adjusted.

Objective 4

The fourth objective was to determine goat producers' perceived level of adequacy regarding current production information materials' quality and quantity used in the industry. Respondents indicated that both the quality and quantity of goat production information was lacking. This indicates a dire need for continued and further research and dispersal of production information to goat producers. The information categories within goat production all showed a lack of current information. All categories also showed that respondents want more information regarding all suggested categories of production information. The highest request was for more marketing information. Marketing is important to any industry. If a product is created but cannot be sold producers will make no profit and the industry will no longer exist, and can therefore be very limiting to a producer. A lack of information in any production category will limit a producer's production potential. If a producer finds him/herself limited in their production, and

therefore income potential, they may leave the market. If a producer cannot fulfill that safety need of having an income they will not attempt to fulfill the self-actualization need, and instead seek out another means to make a living (Maslow, 1943).

Objective 5

It is imperative that accurate, relevant information be made available via the Internet by associations, Extension, businesses and universities as soon as possible. The fifth objective was to determine goat producers' perceived level of preference for delivery/method and level of production information materials used in the industry currently, and what they would like to see in the future. Currently, most respondents obtain information by utilizing the Internet and websites. Internet/website use will remain high according to the results from this survey. It should also be noted that producers frequently receive their information from fellow producers, and intend to continue to do so. Currently, Extension is being underutilized as a resource for goat producers seeking information. Respondents did show a preference to utilize Extension in the future. Respondents also showed an inclination to wanting to utilize veterinarians for information in the future. This pattern implies that if given a chance producer would prefer to use a resource that involved communication with another knowledgeable individual such as a veterinarian, other producer, or Extension agent. Usually, when discussing a topic with another knowledgeable person the response is immediate and can be discussed to further match the individual's production system. However, because that is not always an option, producers then turn to utilizing the internet which also provides a somewhat immediate response.

Objective 6

The sixth and last objective was to determine production categories in which goat producers seek research information. Similar to categories limiting production systems and areas

that producers wish to see more information, health had the highest frequency for suggested research topics. Health was followed by medicine/vaccines, which could be combined with health, as could parasites and specific diseases. Health and health issues were obviously important to the respondents and should be considered the top priority for research in the goat industry. Since it is also the leading limiting factor for these respondents, veterinarians need to be made aware of health issues and treatments in the goat industry. After the health topics, nutrition is the second highest suggestion for research topics, as well as the second highest production system limiting factor. Therefore, nutrition should also be considered a research priority.

There is a reoccurring theme between the answers of the qualitative questions. The same categories are suggested for limiting production factors, production information that should be available, as well as research topics. These specific areas (see Appendix E) are obviously lacking in relevant production information. They were repeated several times with similar frequency, noting that the information available is not assisting producers and there needs to be a change in the information available.

Implications

The results of this study have implications for ABGA members, goat producers, Extension personnel, universities, businesses involved in the goat industry, and goat associations. ABGA members were able to state their opinions about the production information available to them. Their opinions will give guidance to Extension, universities, businesses, and other associations as to the production information preferences and needs. This guidance will lead these groups to better develop educational materials, research topics, and products to assist all goat producers.

This research will also, hopefully, inspire other associations to reach out and ask their members what their goat production information needs are. It is also hoped that it will inspire all goat producers to reach out to Extension, universities, businesses in the goat industry, and their associations with their needs, so that more information can be provided.

Recommendations

It would be advisable for Extension and university personnel, as well as goat associations, to research the needs of the producers in other regions of the United States, individual states, even counties, and other goat associations. The next step should be compiling the production information that fulfills the producers' needs into a central location that is easily accessible, such as a book or website. At the very minimum, additional marketing, health, and nutrition information should be made available to the respondents of this survey as soon as possible, and the mode of distribution should be the internet. These categories of production information had the highest need for more information by respondents; and internet is where most respondents are getting their production information and plan to continue to in the future. Additional goat production research should also be closely considered; this can be accomplished by replicating this study as well as researching topics suggested by the producers. Some respondents volunteered to help with goat production research. Cooperative research with producers would be something to consider for the future.

Demographic information is important, because knowing the audience when presenting production materials will assist in delivering pertinent information to the audience. For instance, if the audience is a younger group just starting off and renting the land, and owning less than 26 goats; discussing large commercial operation procedures may not be applicable. Extension specialists, businesses, universities, and associations need to cater the information they present to

the audience they are presenting to. It may not assist producers if you are discussing utilizing social media as an information forum source, if the producers are of a generation that doesn't utilize computers for information gathering.

It would be beneficial to continue to do research in the goat industry and offer goat production information and technology to producers on a regular basis. With access to regular, updated information, producers can continue to feel knowledgeable in their industry, and continue to improve their production systems. This could be accomplished by utilizing a website that is updated regularly, or even emailing out a monthly newsletter with different production topics for producers.

Producer's limiting factors need to be a concentration. Extension should pay special attention to the limiting factors of the producers in their area, and check on a regular basis because it could change over time. This can only be accomplished by creating a working relationship with the producers. This working relationship can be facilitated through group forums, farm visits, 4H participation, in addition to correlating information with local Land Grant universities.

Both issues, quality and quantity of goat production information, could be addressed by incorporating larger amounts of goat education into university animal science programs; thus educating future livestock producers, veterinarians, Extension agents, and industry representatives. Extension should also be done by university specialists to ensure these groups of individuals are being kept up to date with current production technology. Producer needs may vary between the markets within the goat industry, specifically meat, milk and fiber. For example, the meat goat producers surveyed did not show a large interest in lactation information.

However further research should be performed including milk goat producers to see if their needs are different than reported in this study.

Respondents noted that information was lacking in other categories; some that were not noted by the researchers (see Appendix D). These suggested production information categories, in addition to the categories suggested by the researchers, should be developed and provided to the producers. This could be achieved by collecting accurate and relevant information regarding each specific topic and inserting the information into a medium that is easily accessible for all goat producers.

Since producers would prefer to get their information from another person, facilitating forums where producers can exchange information, moderated by a professional to insure that the information being shared is accurate would be a good idea. Extension personnel should also strive to better connect with producers and provide them with useful and relevant information. Some ways this could be accomplished would be to have Extension personnel attend local shows and association meetings and events. Few veterinarians have been trained extensively in specific goat issues; this should be remedied on a university and training level. Veterinarians that are proficient in goat health should reach out to local producers on a professional level.

The research areas suggested by producers (see Appendix D) should be closely considered for research in the Midwest. Specifically health and health related items, since they are mentioned the most frequently for desired research; and nutrition research should also be considered since it was the second most frequently mentioned category. All categories mentioned should be considered, but these two topics were reoccurring between limiting production factors and research needs. The research desires of producers in other parts of the country should also be determined, because they may vary from these results.

Future Research Suggestions

It would be advisable for similar studies be conducted to members of other associations both national and state wide, such as the American Dairy Goat Association and the Iowa Meat Goat Association. This would increase the association's knowledge of the needs of the producers in their groups. Similar studies should also be performed for the ABGA in other regions of the United States. It was noted by respondents to this survey, that the needs of those in one state or region of the U.S. will probably be different than the needs of someone from another state or region. One respondent noted that a lot of the information that they receive about the Boer goat comes from Texas, but that the information about market and forages do not apply to their home state. Therefore it would behoove researchers to look into this concept and act accordingly.

Consideration should also be given to the suggested research ideas and educational desires given by the producers in this study. Research into these areas would increase the overall knowledge of goats as well as assist producers in their production systems. As per the American Association for Agricultural Education's (AAAE) National Research Agenda (NRA; Doerfert, 2011) Priority 2: New Technologies, Practices and Products (p. 15) states that "[f]oundational research is needed to determine what types of knowledge, skills, environment, and support systems help decision-making processes by individuals and groups…" (p. 17). Health, medicine/vaccines, and nutrition should be analyzed more closely since those three were at the top of all the lists for requesting more information and research by respondents to the survey.

Summary

Additional goat production information, both in quality and quantity, is needed according to respondents. The most effective way to improve the quality and quantity of information

available is to provide the specific information desired by the producers. This information must be relevant to the producers, and should be provided through a media that they prefer to utilize, the Internet for example. Extension personnel, universities, businesses, and associations involved in the goat industry must address and assist with fulfilling the production information needs of goat producers. The proposed information distribution will assist the goat industry to prosper and continue to grow.

References

American Boer Goat Association. (2014). American Boer Goat Association. Retrieved from http://www.abga.org/page.php?pageid=2

Doerfert, D. (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011-2015.* Lubbock, TX: Texas Tech University, Department of Agricultural Education and Communication.

Maslow, A. (1943). A theory in human motivation. *Psychological Review 50*, 370-396. Retrieved from http://psychclassics.yorku.ca/Maslow/motivation.htm

Solaiman, S. (2010). *Goat Science and Production*. Ames, IA: Blackwell Publishing.

United States Department of Agriculture. (2005). The Goat Industry: Structure, Concentration, Demand and Growth. Retrieved from http://www.aphis.usda.gov/animal_health/emergingissues/downloads/goatreport090805.pdf

APPENDIX A. SUVEY INSTRUMENT

Default Question Block

Overall, how knowledgeable do you feel about the goat industry?

- Very
- Somewhat
- No Opinion
- Not Very
- Not At All

Do you feel that goat producers have adequate production information available for their industry?

- Yes
- No

Do you feel that the quality of goat production information (classes, extension information, knowledgeabl veterinarians, etc) available to goat producers adequate?

	Strongly Disagree	Disagree	Neutral	Agree	S
The quality of education in the goat industry is severely lacking					
There are specific areas in the goat industry that are lacking, but most areas are fine					
There are specific areas in the goat industry that have plenty of information, but a few areas that need improvement					
The quality of the education in the goat industry is adequate					
The quality of the education in the goat industry surpasses expectations					
The education in the meat goat industry is adequate					
The education in the dairy goat industry is adequate					

Do you feel that the quantity of production information available to goat producers is adequate?

	Strongly Disagree	Disagree	Neutral	Agree	S
The quantity of education is more than enough for the goat industry to succeed with					
The quantity of education is just enough for the goat industry to succeed with					
There are some areas where quantity of information is lacking for the goat industry to succeed with					
The quantity of education is severely lacking for the goat industry to succeed with					

Do you feel that the educational resources (books, websites, articles, magazines, etc.) available to goat adequate to fit your needs?

	Strongly Disagree	Disagree	Neutral	Agree	S
The educational materials available are severely lacking for my requirements	○	○	○	○	
There are educational materials available but they do not fulfill my needs	○	○	○	○	
There are enough educational materials for my needs	○	○	○	○	
There are more than enough educational materials for my needs.	○	○	○	○	
I find myself looking for information most often online	○	○	○	○	
I utilize journal articles from magazines as well as journals when I have questions	○	○	○	○	

Do you believe there should be more information available to goat producers?

- ○ Yes
- ○ No

Do you have children who are involved in 4H or FFA?

- ○ Yes
- ○ No

If your child/children are involved in 4H or FFA and use goats, do you believe that they have access to a information to complete their projects successfully?

	Strongly Disagree	Disagree	Neutral	Agree	S
Information for my child's project is difficult to find					
The information available is severely lacking for my child/children's needs					
The information available is just enough for my child/children to succeed with their project but no more.					
There is information available but it does not assist my child/children with their project					
There is more than enough information to allow my child/children to succeed with their project					
Goats have proven to be a good project for my child/children					

Identify the categories and amount in which you currently have production information.

	None		Some		Quite a Bit		An Extreme Amount		All	
	0	1	2	3	4	5	6	7	8	9	10
Nutrition											
Health											
Lactation											
Genetics											
Animal Evaluation											
Functional Anatomy											
Preferred Management Practices											
Meat Production and Quality											
Milk Production											
Fiber Production											
Environmental Enhancement											
Housing											
Marketing											
Business Plan											
Other											

What categories (health, nutrition, management, etc.) do you believe are limiting your production system? (Please describe)

Identify the categories in which you would like to change the amount of production information available.

	Much Less		Less		Somewhat Less		The Same	Somewhat More		More		Much More
	0	1	2	3	4	5	6	7	8	9	10	
Nutrition												
Health												
Lactation												
Genetics												
Animal Evaluation												
Functional Anatomy												
Preferred Management Practices												
Meat Production and Quality												
Milk Production												
Fiber Production												
Environmental Enhansement												
Housing												
Marketing												
Business Plan												
Other												

Is there information you would like to receive that you haven't been able to find?

- Yes
- No

What additional production information do you believe should be available?

How much time do you spend investigating goat production information each month?
Example: I spend an average of 3 hours a month looking up goat production information online (usually health and nutrition information); I spend at least 5 hours a month on social media sites discussing production information with other producers; and I spend about 2 hours a month looking up goat production information in books. So in total I spend about 10 hours a month looking up goat production information.

Identify the resources you currently use to access goat production information and the frequency you utilize them.

	Never			Rarely		Sometimes		Often		All of the Time	
	0	1	2	3	4	5	6	7	8	9	10
Internet/websites											
University classes											
Extension											
Veterinarian											
Books											
Lectures											
Expositions											
Pamphlets											
Social media (Facebook, Twitter, Blogs, etc.)											
Workshops											
Other Producers											
Other											

Identify the resources you would like to utilize to access goat production information in the future. (Select all that apply)

- ☐ Internet/Websites
- ☐ University Classes
- ☐ Extension
- ☐ Veterinarian
- ☐ Books
- ☐ Lectures
- ☐ Expositions
- ☐ Pamphlets
- ☐ Social Media (Facebook, Twitter, Blogs, etc.)
- ☐ Workshops
- ☐ Other Producers
- ☐ Other

How do you currently sell your goats and goat products (meat, milk, fiber)?

	Never			Rarely		Sometimes		Often		All of the Time	
	0	10	20	30	40	50	60	70	80	90	100
Auction											
Individual Sale											
Bulk Buyers											
Products are processed and sold on farm											
Products are sold to processing plants											
Sell animals to ethnic markets											
Religious Holiday sales (Easter, Christmas, Passover, Ramadan, etc.)											
Other											
Other											

How would you like to sell your goats and goat products in the future? (Select all that apply)

- Auction
- Individual Sale
- Bulk Buyers
- Products are processed and sold on farm
- Products are sold to processing plants
- Sell animals to ethnic markets
- Religious holiday sales (Easter, Christmas, Passover, Ramadan, etc)
- Other
- Other

How do you currently market/advertise your products and how would you like to in the future?

	Currently	Click to write Column 2 Future
Facebook/Social media		
Newspaper		
Online Classifieds		
Journals		
Word of mouth		
Signage		
Specialized websites		
Personal website/blog		
Social Media		
Craigslist		
I don't advertise		
Other		

In your opinion what is your level of goat expertise? (0 being Novice to 100 being Expert)

	0	10	20	30	40	50	60	70	80	90	100
Expertise											

Do you think there has been adequate research done on goats?

- Yes
- No

In which areas of goat production do you feel there should be more research?

Gender

- Male
- Female

Age

- 18-25
- 26-35
- 36-50
- 51-65
- >65

Ethnicity

- American Indian/Native Alaskan
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or Other Pacific Islander
- White
- Other
- Prefer not to answer

Education Level

- Less than high school
- High School Diploma/GED
- Some College
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- Terminal Degree
- DVM Degree

Years of goat experience

State of residence

Number of goats owned

- 1-10
- 11-25
- 26-50
- 51-100
- 100-200
- 200+

Use of goats currently on your farm (select all that apply)

- [ ] Meat
- [ ] Milk
- [ ] Fiber
- [ ] Show
- [ ] Pets
- [ ] Brush Control
- [ ] Other

Do you own or rent the land on which you have your goats?

- ( ) Own
- ( ) Rent
- ( ) Both

Number of acres that you rent or own

Gross annual farm sales (not just from goat sales)

- ( ) <$10,000
- ( ) $10,001- $24,999
- ( ) $25,000- $49,999
- ( ) $50,000- $99,999
- ( ) $100,000- $250,000
- ( ) >$250,000

Do you exhibit at local, state, regional or national shows?

- ( ) Yes
- ( ) No

You are a member of:

- [ ] American Boer Goat Association
- [ ] American Dairy Goat Association
- [ ] Both
- [ ] Neither
- [ ] Other (Specify)

APPENDIX B. INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 4/28/2014

To: Elise Gallet de St. Aurin
217D Curiss Hall

CC: Dr. Thomas H Paulsen
217 Curtiss Hall
Awoke D Dollisso
201 Curtiss Hall

From: Office for Responsible Research

Title: Production Information Needs of American Bgoer Goat Association Members in the Midwestern United States

IRB ID: 14-268

Study Review Date: 4/28/2014

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
  - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

  Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

  Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. **Only the IRB or designees may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

Please be aware that **approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that**

permission from these other entities will be granted.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

APPENDIX C. CONTACT LETTERS

FIRST CONTACT

To: Full Study Email 1

Send Date: May 24, 2014 @ 10:00 AM

Survey Link Type: Individual Link

Response Set: Use the active response set

From Address: noreply@qemailserver.com

From Name: Elise Gallet de St Aurin

Reply-To Email: eliseg13@iastate.edu

Subject: Goat research project for graduate student

Message:

email1

Dear American Boer Goat Association Member

My name is Elise, I am a Master's student in Agricultural Education at Iowa State University and an ABGA member myself. I need your assistance in completing my thesis project. I am doing my Master's thesis on the production information/educational needs of ABGA members in the Midwest and your opinions would be really helpful. I have been working in the goat industry for about 8 years, and after I finish my Master's degree I plan on pursuing a PhD in Animal Science and becoming a professor concentrating on Goat Science and Production. I know how valuable your time is right now, especially with the new summer show season approaching, but the information from just 10 minutes of your time will help me complete my thesis project and hopefully help your operation in the future. As an incentive, those who participate will have their name put into a drawing for a $50 Hoegger Goat Supply gift card.

This link is uniquely tied to this survey and your email address. Please do not forward this message.
${l://SurveyLink?d=Take%20the%20Survey}

The survey contains only three parts. We are interested in your perceptions of goat production information in two areas; 1) your current thoughts on the educational materials available in the goat industry and 2) any changes that should or shouldn’t be made in regards to education in the goat industry. Part three of the survey is a basic demographic section. It shouldn't take long to complete, and if you have any questions you are more than welcome to email me.

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Please note that your participation in this research is voluntary. You may choose to withdraw from participation in this study at any time by closing out of the questionnaire. Again if you have any questions please feel free to contact me at eliseg13@iastate.edu or (319) 929-5201 or Dr. Thomas Paulsen, tpaulsen@iastate.edu or (515) 294-0047. If you have any questions about the rights of research subjects or research related injury please contact the Institution Review Board Administrator, (515) 294-4566, IRB@iastate.edu or Director, (515) 294-3115, Office of Responsible Research, Iowa State University, Ames, Iowa, 50011.

Thank you for your help I look forward to receiving your responses, and putting my data to work for you.

Sincerely,

Ms. Elise Gallet de St. Aurin
Graduate Student
Iowa State University
Ames, Iowa 50010

Dr. Thomas Paulsen
Assistant Professor
Iowa State University
Ames, Iowa 50010

Follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

SECOND CONTACT

To: Full Study Email 1

Send Date: May 30, 2014 @ 3:26 PM

Survey Link Type: Individual Link

Response Set: Use the active response set

From Address: eliseg13@iastate.edu

From Name: Elise Gallet de St Aurin

Reply-To Email: eliseg13@iastate.edu

Subject: Goat education research project for graduate student

Message: survey2

Dear American Boer Goat Association Member

First of all, I would like to personally thank the individuals who have responded to my survey thus far. I have received 36 respondents to date, and all of your names have been added into the drawing for the gift card as my personal thanks to you. Thank you!!

For those who have yet to respond, I still need your help to meet ISU's minimum requirement for number of survey responses. The link below will take you directly to the survey. Your opinions really do matter to me and I would love your input. I promise the survey will not take more than 15 minutes of your time and that your responses will make a difference.

This link is uniquely tied to this survey and your email address. Please do not forward this message.
${l://SurveyLink?d=Take%20the%20Survey}

I have already had individuals ask for my results when I finish my project; and I will send those out to people who request them as well as all respondents.

For those who may not have gotten my first email: my name is Elise, I am a Master's student in Agricultural Education at Iowa State University and an ABGA member myself. I need your assistance in completing my thesis project. I am doing my Master's thesis on the production information/educational needs of ABGA members in the Midwest and your opinions would be really helpful. I have been working in the goat industry for about 8 years, and after I finish my Master's degree I plan on pursuing a PhD in Animal Science and becoming a professor concentrating on Goat Science and Production. I know how valuable your time is right now, especially with the new summer show season approaching, but the information from just 15 minutes of your time will help me complete my thesis project and hopefully help your operation

in the future. As an incentive, those who participate will have their name put into a drawing for a $50 Hoegger Goat Supply gift card.

The survey contains only three parts. We are interested in your perceptions of goat production information in two areas; 1) your current thoughts on the educational materials available in the goat industry and 2) any changes that should or shouldn't be made in regards to education in the goat industry. Part three of the survey is a basic demographic section. It shouldn't take long to complete, and if you have any questions you are more than welcome to email me.

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Thank you again for all your help!

Sincerely,

Ms. Elise Gallet de St. Aurin
Graduate Student
Iowa State University
Ames, Iowa 50010

Dr. Thomas Paulsen
Assistant Professor
Iowa State University
Ames, Iowa 50010

Follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

THIRD CONTACT

To: Full Study Email 1

Send Date: June 4, 2014 @ 4:30 AM

Survey Link Type: Individual Link

Response Set: Use the active response set

From Address: eliseg13@iastate.edu

From Name: Elise Gallet de St Aurin

Reply-To Email: eliseg13@iastate.edu

Subject: Thank You!! - Goat education research project for graduate student

Message: survey 3

Dearest ABGA Member,

Thank you, thank you, thank you! I cannot believe the outpouring of support for my project. It really warms my heart to see how much everyone cares about our industry. I have received 59 respondents to date, and all of your names have been added into the drawing for the gift card as my personal thanks to you. Thank you again, you have no idea how much this means to me!!

For those who have yet to respond, I still need your help to meet ISU's minimum requirement for number of survey responses. Only about 40 more surveys left to go, and after this email only one more will be sent before the results of my study. The link below will take you directly to the survey. Your opinions really do matter to me and I would love your input. I promise the survey will not take more than 15 minutes of your time and that your responses will make a difference.

This link is uniquely tied to this survey and your email address. Please do not forward this message.
${l://SurveyLink?d=Take%20the%20Survey}

I have already had individuals ask for my results when I finish my project; and I will send those out to people who request them as well as all respondents.

For those who may not have gotten my last few emails: my name is Elise, I am a Master's student in Agricultural Education at Iowa State University and an ABGA member myself. I need your assistance in completing my thesis project. I am doing my Master's thesis on the production information/educational needs of ABGA members in the Midwest and your opinions would be really helpful. I have been working in the goat industry for about 8 years, and after I finish my Master's degree I plan on pursuing a PhD in Animal Science and becoming a professor concentrating on Goat Science and Production. I know how valuable your time is right now,

especially with the new summer show season approaching, but the information from just 15 minutes of your time will help me complete my thesis project and hopefully help your operation in the future. As an incentive, those who participate will have their name put into a drawing for a $50 Hoegger Goat Supply gift card.

The survey contains only three parts. We are interested in your perceptions of goat production information in two areas; 1) your current thoughts on the educational materials available in the goat industry and 2) any changes that should or shouldn't be made in regards to education in the goat industry. Part three of the survey is a basic demographic section. It shouldn't take long to complete, and if you have any questions you are more than welcome to email me.

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Thank you again for all your help!

Sincerely,

Ms. Elise Gallet de St. Aurin
Graduate Student
Iowa State University
Ames, Iowa 50010

Dr. Thomas Paulsen
Assistant Professor
Iowa State University
Ames, Iowa 50010

Follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

FINAL CONTACT

To: Full Study Email 1

Send Date: June 9, 2014 @ 4:00 AM

Survey Link Type: Individual Link

Response Set: Use the active response set

From Address: eliseg13@iastate.edu

From Name: Elise Gallet de St Aurin

Reply-To Email: eliseg13@iastate.edu

Subject: Goat Survey Still Need Help! Thank you!

Message: final survey

Dearest ABGA Member,

I am almost done! I appreciate your patience with the many emails I've sent requesting your help. Only about 20 more surveys needed to complete my project. This is my last request to be sent out before I close the survey to work with the data. So please, if you have yet to respond to my survey follow the link below. I promise the survey will not take more than 15 minutes of your time and that your responses will make a difference. I really need everyone's opinions to provide the best results and feedback to the industry; I know my research will change how people look at the production information available to us as producers. Your opinions really do matter to me and I would love your input.

This link is uniquely tied to this survey and your email address. Please do not forward this message.
${l://SurveyLink?d=Take%20the%20Survey}

I once again would like to thank the individuals who have responded to my survey. Thank you so much! Because of your support I will be able to complete my Master's degree by the end of July as planned. I have received 80 respondents to date, and all of your names have been added into the drawing for the gift card as my personal thanks to you. My survey will close on Friday, June 13th at midnight and the winner will be chosen and emailed Saturday, June 14th. Thank you again for all of your opinions and support, you have no idea how much this means to me!!

I have already had individuals ask for my results when I finish my project; and I will send those out to people who request them as well as all respondents.

For those who may not have gotten my last few emails: my name is Elise, I am a Master's student in Agricultural Education at Iowa State University and an ABGA member myself. I need

your assistance in completing my thesis project. I am doing my Master's thesis on the production information/educational needs of ABGA members in the Midwest and your opinions would be really helpful. I have been working in the goat industry for about 8 years, and after I finish my Master's degree I plan on pursuing a PhD in Animal Science and becoming a professor concentrating on Goat Science and Production. I know how valuable your time is right now, especially with the new summer show season approaching, but the information from just 15 minutes of your time will help me complete my thesis project and hopefully help your operation in the future. As an incentive, those who participate will have their name put into a drawing for a $50 Hoegger Goat Supply gift card.

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Thank you again for all your help!

Sincerely,

Ms. Elise Gallet de St. Aurin
Graduate Student
Iowa State University
Ames, Iowa 50010

Dr. Thomas Paulsen
Assistant Professor
Iowa State University
Ames, Iowa 50010

Follow this link to the Survey:
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Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

APPENDIX D. ANSWERS TO QUALITATIVE QUESTIONS

What categories (health, nutrition, management, etc.) do you believe are limiting your production system?

1. Nutrition.
2. Health.
3. Management practices.
4. Health.
5. Health and nutrition.
6. Estimated breeding values.
7. Marketing, housing, health, genetics.
8. Health.... really need more info on worms etc.
9. Size of operation and not being in production sales.
10. Marketing to an ethnic clientele, feeding for best and fastest growth w/o growth enhancers, knowing what animals to cull.
11. Health, nutrition, genetics.
12. Nutrition, and management are the most lacking.
13. Health (lack of a knowledgeable vet).
14. Vets in this area know very little about goats.
15. Genetics, Housing.
16. The goat business needs to ensure that 4H advisors know where the info for showing and preparing the goats for the fair.
17. Evaluation, management and marketing.
18. Marketing.
19. Marketing.
20. Nutrition, and marketing.
21. I would like to gather more information on using genetics and nutrition to increase milk production in boers without sacrificing meat yield.
22. Marketing.
23. Really none for myself other than maybe better genetics, and better health, and nutrition.
24. Health.
25. Vet care specifically for goats, medications wormers etc. that are effective!
26. Most sources are dealing with 'show' goats and we do not do that.
27. Marketing.
28. Adequate marketing avenues for producers to get to public demand. Lack of education of how healthy and economical goat meat is when compared to other meats such as beef.
29. Management and marketing ... I can make a larger profit selling my hay than feeding it to the goats and selling their kids.

30. Management.
31. Health.
32. I have great vets in my area for my goats; however there are a lot of people who don't. There really needs to be more consumer education as well as education in the medical field as to the benefits of goat meat.
33. Health.
34. Health and nutrition.
35. I want to raise meat production for my future farming and no info as to how to break into the market.
36. Marketing.
37. Health and nutrition are the two hardest subjects to find info on when first starting out with goats. It's taken several years to get where we are today and health and nutrition is what held us back. Talking with other producers is where we had to get most of our info.
38. Available information on dewormers and medications for goats is severely lacking. Fortunately I have a very good vet and a lot of experience, but it is frustrating to hear of other producers that lose animals due to lack of information or lack of availability of veterinary care/medication.
39. Management, we have been increasing our heard slow and we learn as we go.
40. Health.
41. Health & Reproduction issues/concerns.
42. Health and nutrition.
43. Meat Production and quality.
44. Health & nutrition.
45. Marketing goat meat.
46. Health. vaccinations, etc.
47. Health/nutrition at our present location we currently deal with water quality issues that directly affect our mineral uptake. We are therefore required to constantly manage our herd for mineral deficiencies. To manage this we use copper bolus and injections of multimin. Just one example. The drought here for the last few years is also challenging in regards to hay quality to meet needs. Just examples.
48. Health.
49. Health care by trained vets; nutrition sales people trained in goat nutrition.
50. Marketing- more online/regional marketing opportunities. Health-would like a higher developed preventative care/vaccinations such as sore mouth, CAE (Caprine Arthritic Encephalitis), and CL (Caseous Lymphadenitis).
51. Health concerns on worm prevention/management.
52. Marketing and herd management.
53. All.
54. Health and nutrition, sometimes nutritional issues can lead to health problems.
55. Health, marketing, genetic potential.
56. Health and genetics.
57. Health of the kid from birth to weaning.

58. Limited marketing in my area, some mysterious health issues Oho State University doesn't spend much time on meat goats for the increasing number in the state. Most of what I have learned has been trial and error and listening to people who are versed in the industry.
59. Testing and validating all information, not just passing on what you have heard and let the Professors pass correct info to our future Vets.
60. Management.
61. Marketing, disease prevention, genetics.
62. Management - getting them to market and what is the preferred weight, size...
63. Genetics and nutrition.
64. Health.
65. Nutrition and the way this contributes to meat production.
66. Health, parasite management.

What additional production information do you believe should be available?

1. Nutrition and herd improvement.
2. Marketing with carcass data. I raise 600 nannies and marketing is key to success for me.
3. Holistic practices I usually spend 3 hours a month looking up health and nutrition information.
4. I find it hard to find reliable information on several specific diseases other than a paragraph here or there.
5. Estimated Breeding Values.
6. I strongly feel we need a different sire evaluation system. The ABGA ennoblement program is phenotype biased and does not contain any imperial data. For example: no EPDs available.
7. Mostly health related problems and what to give. Very little info on this.
8. I would like to get subscriptions to Australia and South African Boer goat magazines.
9. Most of my information has come from on the job learning and the internet. I've learned to evaluate what the internet offers and grope my way through the dark to a solution. One of the big problems goat owners face is finding vets who will help us with medicines or health issues. Most won't mess with small livestock like sheep and goats, so we're left to help each other.
10. Supported information on health, nutrition, and genetics.
11. EPDs, general health info.
12. How to better market in very rural area with few goat farms around.
13. Genetic, Meat Goat 4H project from Iowa 4H is lacking!
14. Any info that 4H advisors will need to prepare the 4H'ers.
15. Evaluation of animals, more consistent management practices.
16. Health issues. Communication about the goat industry and inform the public about goat products.
17. Marketing and meat production.

18. More information on the commercial side of cheaply feeding goats, rather than just show goats.
19. Just more information regarding meat production and marketing.
20. There really needs to be study by ISU, about CL's (Caseous Lymphadenitis), give me a call and we can discuss this topic some more XXX-XXX-XXXX.
21. Information on flushing and the very best way to prepare mom/dad/recipient.
22. Where to market and to get best prices.
23. It isn't so much that the information is not available, just that it is not always easy to track down exactly what I am looking for.
24. Why is skin pigmentation in Boer goats a criteria of character? Is it important if not one case of skin cancer has been documented in Boer Goats?
25. Market reports, buyers, milk yields.
26. More information on goat health and parasite control.
27. Health and hoof.
28. Daily care from birth to table costs.
29. Drug withdrawals on extra label drugs from a reliable source.
30. Dewormers! Parasites are the Southern breeders' worst enemy and people are just guessing for the most part with their deworming programs.
31. Genetics and breeding.
32. Trouble shooting health problems.
33. As the founder of the MBGA, INC. I would like to see more research in the worming of Boer Goat in MICHIGAN. Environment tends to play an important role in resistance.
34. Health care issues/symptoms, Veterinarians who know something about goats!!! How to identify possible issues related to genetics.
35. How to determine needs of goats going downhill health wise - which wormers, which vitamins, how to check eliminate without a vet.
36. Additional marketing info.
37. Health.
38. Marketing of the product: goat meat; uses and care of.
39. Regional market trends and history is hard to find and more info would lead to a stronger market.
40. Probably has to do with ongoing research--but need more definitive information on worming practices--conflicting info.
41. Better marketing methods.
42. Rules and confirmation and score cards.
43. Available medications and treatments.
44. New and old health products.
45. In Boer goat production why is there such a difference between show goats and show wether production. The bottom line being raising a marketable product for the meat industry. Most of what I have learned about Goat (meat goat) production I have learned from trial and error. It helps I have a lifelong background in Animal Husbandry, Cattle, Hogs and Horses. In my area I am considered more knowledgeable about Goats than most Vets even though I am not a Veterinarian. In Ohio most Vets would rather work on Dogs and Cats than Dumb old Goats. I am fortunate that my Vet is specialized in Small Ruminants.

46. Business planning & management.
47. The various grasses/forage that pertains to the area in which we live, not the available grasses/forages available for Texas. I understand that is the origination/development of the Boer goats, but our grasses/forages in Kansas are different that in Texas.
48. Genetics, latest advancements in worm control, disease prevention, herd management.
49. Guide to marketing my animals in my area (Nebraska).
50. Breeding for meat and longevity.
51. Care of the kid during lactation to weaning and what times to vaccinate. After 14-15 years I just found out how to worm a kid and the ages to do both.
52. All the above.

In which areas of goat production do you feel there should be more research?

1. Nutrition and herd management of small producers.
2. Advanced breeding technique, A.I. Embryo transfers etc.
3. Genetics.
4. Natural health and nutrition.
5. Health and genetics.
6. EBV's.
7. Sire evaluation, health management, consumer acceptance, reproduction.
8. Vaccines for worms, goat health.
9. Health and nutrition.
10. More products should be labeled for goats and not other animals but used on goats.
11. Medicines. There are few that have been approved officially for goats. We tend to use ones approved for cattle or sheep, because otherwise, there would be few things we could do to help improve our herd's health.
12. All of it.
13. CL (Caseous Lymphadenitis), worm management.
14. Health, production EPDs like those available to cattle producers.
15. Health.
16. Pharmaceuticals - getting approved drugs.
17. Nutrition and exercise for getting goats ready for shows and fairs.
18. Medications, worming practices, nutrition.
19. Health issues, nutrition.
20. Medicines.
21. Worm issues, brush control workshop.
22. Medications.
23. I think researchers need to look at the obvious that everyone says, which is internal parasites. If researchers can develop natural anthelmintics that are truly affective, and

internal parasites can't develop resistance too, producers will save a substantial amount of time and money. I also see a need for research in feeding commercial goats, whether it be developing seed mixtures that work best on pasture, or looking at by products, but producers need alternatives to corn and soybean meal.

24. Health.
25. Disease, especially CL's (Caseous Lymphadenitis), health, genetics.
26. Health and nutrition.
27. Health.
28. Flushing, growing hair.
29. Meat production and marketing with the 'smaller' producer (say under 30 goats).
30. Health issues.
31. Appropriate medications.
32. Approval of medication for goats.
33. Medications.
34. Worms.
35. CL (Caseous Lymphadenitis), jones, car cures need to be found!
36. Health and parasites, need more goat friendly wormers and medication, many are not labeled for goats.
37. Health for public. The best feed from birth to table.
38. Health and drug used in goats and treatment options.
39. All areas should be handled like they are for cattle, swine, sheep and poultry.
40. Parasite control is a big one. In the show world people have very little understanding of doe care during gestation resulting in many deaths due to toxemia that could be prevented. Those are the two biggest issues that I see.
41. Genetics.
42. Health.
43. Worming & Antibiotics, Health issues in different regions, each climate in America has different ways that breeders need to adjust their programs, I.e. Michigan cannot get advice from Texas breeders, two different climates are two different ways of breeding, and health programs.
44. Health issues & diseases, reproductive concerns/possible issues, genetics - how to identify possible concerns when selecting breeding stock.
45. Health.
46. All.
47. Health.
48. Health as related to meds and vaccines so more meds could be approved for use in goats and not be off label.
49. Parasite issues and hoof problems.
50. Grazing vs. grain fed production.
51. Nutrition and preventing disease.
52. Health.
53. Health and marketing.
54. Parasites especially the barber pole worm.
55. In all areas.
56. Genetics & feed conversions.

57. My area lacks veterinarian expertise and I find it hard to find correct info on the use of medications as most are not labeled for use in goats.
58. Health and production.
59. Disease, and disease prevention. A lot of people fly into the goat business and are out in 2 years flat broke because they are miss informed and don't seek out experienced produces like myself.
60. Disease and Medicine; Genetics (DNA).
61. Meat Goats.
62. Performance and growth, genetics.
63. Medical for more drugs to be approved for goat use.
64. Genetics of production traits, disease prevention & treatment, nutrition & feeding, marketing
65. Small herd production for meat and fiber in the plains states, more research by USDA-ARS since goats are increasingly popular meat animals.
66. Their nutritional needs and disease control
67. Climate.
68. Health.
69. Health, disease and medical treatment.