

THE OKLAHOMA STOCKER CATTLE INDUSTRY:  
STRUCTURE AND FUNCTION

By

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Abstract: Little information exists on the decision making and management of the Oklahoma stocker industry and the economic flexibility of the stocker industry. A survey was conducted in 2017 by the Oklahoma Cooperative Extension Service. The survey focused on stocker production and management practices, including the timing and duration of stocker production, health, forage use, purchase and marketing of stocker cattle, the timing and distance of shipping, and biosecurity practices. This thesis initially summarizes the survey, then, uses the survey data to profile individuals participating in the Oklahoma stocker cattle industry, by examining the marginal values from logit models. Understanding which individuals use specific combinations of practices across the Oklahoma stocker industry will increase information availability for agency planning and policy considerations. The buying and selling patterns of Oklahoma stocker cattle producers are used to further explain the dynamics of the fed cattle market in Oklahoma. The preferences given by the respondents in the survey were used to create a series of profiles that uncovers the trends of producers in the industry.

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## CHAPTER I

### THE BACKGROUND OF THE STOCKER INDUSTRY

#### **What is the stocker industry?**

The stocker cattle industry consists of a diverse group of producers who fill the gap between weaned calves from the cow-calf segment and feedlot ready cattle (Peel 2006). This group of producers use many different management approaches to target gain and manage production risk on their cattle. The stocker cattle industry is difficult to classify by any particular age, size, or specific production system (Peel, 2003). Typical stocker operations focus on growing cattle rather than finishing; therefore, they take weaned calves weighing 300-600 pounds and grow them to feedlot placement weights of 700-900 pounds. This growing phase allows calves to develop more frame before they are placed on high-energy finishing rations in order to increase the physiological maturity of calves prior to finishing (Neumann and Lusby, 1986). This is due to the fact that medium-framed to small-framed calves have too much fat accretion before reaching acceptable finishing weight if the growing phase is neglected. A more regulated growth rate is achieved by producers relying more on forage such as native pastures, improved pastures, small grain forages, and crop residues than other concentrate feeds such as grains or other by-product derived feeds. Breeding cows differ from stocker cattle in this aspect because they merely need to maintain their weight whereas stocker cattle can

utilize these types of forage relatively more productively than cows (Price, 1981). Feedlots want tractor-trailer load lots of immunocompetent matched calves (sex, weight, breed type) that are familiar with feed and water sources. The cow-calf sector with diverse calving dates and breed types is ill-equipped to supply these desired calves.

According to Parsons (1994) stocker ownership in the U.S. can be grouped into three broad categories. These categories are cow-calf retained ownership, commercial stocker operations, and backward integration by cattle feeders. Although, depending on available resources and management expertise, producers may choose to practice a mix of stocker ownership given the dynamic nature of the industry. Short term variability in livestock and feed production is partially absorbed by the flexibility built into stocker production. As a result, the industry is able to disperse seasonally produced cattle through time (Parsons, 1994).

The total number of cattle inventoried in the United States as of January 1, 2022, was 91.9 million head, and from that the calculated feeder cattle supply was 25.5 million head (USDA, NASS 2022). The southern plains region (Kansas, Oklahoma, & Texas) accounts for 28% of the total feeder cattle supply, about 7.1 million head (USDA, NASS 2022). The Midwest makes up 14%, the Northern Plains 13%, and the other 45% of the feeder cattle inventory is dispersed throughout the rest of the United States (Peel, 2003).

### **Economic roles of stockers**

Of the 91.9 million cattle in the United States 27.7% are part of the feeder cattle marketing sector. This has a profound impact on beef prices as a whole. The framework to understand the economic role of the stocker cattle industry in the U.S. is provided in a

thesis from 1994 (Parsons, 1994). It was concluded that the stocker industry enables the beef cattle industry to switch from the grain-intensive to the forage-intensive production technology by allowing the cattle to be grown on forage to heavier weights before they enter the feedlot phase of production (Parsons, 1994). This allows for price signaling across weight classes of feeder cattle to be used to determine which production system beef producers should be utilizing.

The various weights and classes of feeder cattle represent a complex set of markets that are related, but not in a fixed pattern. The profit potential is largely determined by the gross margin between the initial cost of the purchased stocker animal and the final sale value of the feeder animal (Peel, 2006). This margin is determined by the relationship between feeder cattle price and weight. Peel (2006) found that the variability of the value of gain was relatively high on medium to large frame number one steers from 1992-2004, with total gain being set at 250 lbs. The extreme maximum and minimum of the value of gain ranged from  $-\$0.04/\text{lb}$  to  $\$1.30/\text{lb}$ . Peel concluded that there can be little doubt of the inherent risk associated with stocker production and the importance of selecting the least cost management practices that are crucial for profits. Stocker economics are driven by the price relationships of feeder cattle at various weights that reflect grain and forage market values (Peel and Riley, 2018). The economic motivation for stocker production is primarily to arbitrage and coordinate cattle industry production across sectors and over time, as well as providing industry adjustments to feed and forage market conditions.

## **Data Issues**

Little information exists on the decision making involved in the Oklahoma stocker industry and the economic flexibility of the stocker industry. Previously, conclusions have been drawn about Oklahoma stocker producers using surveys such as the “Oklahoma Beef Management and Marketing Survey” (Schumacher, 2017), but no survey to date fully encompasses the Oklahoma stocker industry. Due to this lack of information, the stocker industry has been invariably left behind by research and extension programs. A stocker producer’s profitability depends on which management program is chosen at a particular point in time (Peel, 2006). Specific analysis for Oklahoma’s producers is imperative due to the contrast in production systems across the nation with even the terminology varying regionally (Peel, 2003).

Reference material is basically non-existent for Oklahoma stocker cattle producers. There are few resources on management practices that provide the needed information to project profitability and market flexibility. In 2006, the Oklahoma Beef Cattle Manual was distributed to producers, and they were asked to complete a “Beef Cattle Management Practices Assessment.” One of the surveys included in the assessment was for beef producers with only stockers. From this survey, conclusions were drawn on the factors affecting the adoption of recommended management practices by stocker cattle producers. This study concluded that if operations varying in size and income dependency became increasingly differentiated between management practices, then the best practices provided through education programs became increasingly beneficial to the small, income dependent producer (Johnson et al, 2008). Operation size was significant in four of the six management practices researched in this study having a

positive impact on the adoption of the management practice in question associated with increasing size (Johnson et al, 2008). This is consistent with the hypothesis that a collection of data available across producers in any capacity could benefit the small operations frequently disconnected from the information, as well as prominent producers with greater accessibility to resources.

Vestal et al. (2007) collected similar data through a stocker cattle survey focusing on the cow-calf industry. Some conclusions about management practices can be gleaned from these surveys. For example, 56% of producers indicated they nearly always castrated bull calves not intended for breeding (Vestal et al, 2007). All producers surveyed implant steer calves 18% of the time and heifer calves 13% of the time; whereas, 37% of large producers implant steers and 25% implant heifers (Vestal et al, 2007). A cow-calf producer's average hay feeding season, by 45% of respondents, was 91-120 days (Vestal et al, 2007). This conspectus of information is useful for producers who rely on resources like extension agencies to make their management decisions.

There is relatively little data on stocker production and inventory where there is monthly data for items like cattle on feed, but stocker cattle numbers and production are not measured directly in USDA data. Estimated feeder supply can only be calculated nationally on January and July 1st, and only in January at the state level. That means the feeder supply estimate reflects winter grazing, but not necessarily summer grazing as most stocker operations turn over their cattle within the same year.

Table 1. Cattle Inventory by Class and Calf Crop  
United States: January 1<sup>st</sup> (1,000 head)

	2021	2022
All cattle and calves	93,790	91,902
All cows and heifers that have calved	40,286	39,500
Beef cows	30,844	30,145
Milk cows	9,442	9,375
All heifers 500 pounds and over	20,200	19,776
For beef cow replacement	5,803	5,612
For milk cow replacement	4,609	4,451
Other heifers	9,789	9,714
Steers 500 pounds and over	16,788	16,580
Bulls 500 pounds and over	2,211	2,110
Calves under 500 pounds	14,305	13,936
All cattle on feed	14,667	14,693
Calf Crop	35,085	**
FEEDER SUPPLY	26,214	25,537

USDA-NASS, 2022

Estimated feeder supply is calculated from the inventory estimates in Table 1. The feeder cattle supply calculation shown in Table 1 is the summation of all heifers 500 pounds and over, steers 500 pounds and over, and calves under 500 pounds, minus the heifers for both beef and milk replacements, and all cattle on feed. This calculated number leaves out anything that does not fall into those categories of cattle. The above 500-pound and below 500-pound split is awkward because of the variations in weaning and marketing that occur across cow-calf producers. Stocker cattle, that is, weaned cattle not yet in feedlots, may be under or over 500 pounds in weight. Fall born calves are also still suckling by January 1<sup>st</sup>, which means that they are not properly accounted for in the January 1 calculations. Therefore, it is difficult to make market supply predictions for the feeder cattle market, even though some conclusions can be drawn from weekly auction reports.

## **Stocker Production in Oklahoma**

This research answers the question “Who is an Oklahoma stocker cattle producer?” It provides insight to the internal operation of the industry as a whole in an effort to support increased profitability. The number of cattle operations in the state of Oklahoma, based on census data, is just over 52,000 (NASS, 2020). Cow-calf producers, stocker producers, and feedlot operators make up Oklahoma’s cattle industry. Stocker producers generally serve as the intermediators between the cow-calf producers and the feedlot operators (Peel, 2003). The Oklahoma cattle and calf inventory is ranked fourth in the nation with a total inventory value of 5.15 billion dollars (NASS, 2020).

This study investigates the buying preferences of the Oklahoma stocker cattle producer. In 2004, a fact sheet was composed using Oklahoma Quality Beef Network sales data that looked at the buying preferences given certain feeder calf traits (Ward, Ratcliff, and Lalman, 2004). Ward concluded that the buyer paid a premium for steer calves, medium frame calves, heavy muscled calves, thin fleshed calves, and polled calves. These conclusions were used to aid cow-calf producers in constructing more uniform sale lots to maximize profits gained at the sale barn.

A 1991 study drew a conclusion similar to the study discussed above where medium framed, polled steers were the most sought-after group of cattle by Kansas stocker cattle producers (Bock, Brazle, and Kuhl, 1991). Another study, from Texas, found that the benefits of clostridial vaccinations, castration, implant, and de-worming all had a positive effect on the productions average value of gain (Ringer et al, 2008). Both studies from neighboring states identified similar results to those previously found in the Oklahoma literature.

## **Objectives**

The first paper (discussed in chapter 2) is “The Oklahoma Stocker Industry,” and its goal is to summarize the 2017 Oklahoma Beef Calf/Stocker Movement Survey to document stocker industry practices and flexibility. Stocker production is a margin business. Maximizing net margin is achieved through least cost management practices. Therefore, a consensus of information for Oklahoma cattle producers will be useful for producers as a reference when choosing a production system. This project also provides a comprehensive description and documentation of the Oklahoma stocker industry including the demographics of stocker producers, alternative stocker production systems and how producers chose among them, animal health management, forage resources used for stocker production, producer preferences for the type, weight and origin of stocker purchased, and stocker marketing alternatives.

The second paper (discussed in chapter 3) is “Stocker Industry Production and Marketing Flexibility to Enhance Beef Industry Competitiveness.” The general objective of this paper is to examine the survey data to profile individuals participating in the Oklahoma stocker cattle industry. The purchasing characteristics that are desirable by stocker cattle producers will be identified. This will be used to provide knowledge to producers when making marketing decisions to support increased profitability.

### **The 2017 Oklahoma Beef Calf/Stocker Movement Survey**

The 2017 Oklahoma Beef Calf/Stocker Movement Survey was written by OSU extension and implemented by NASS. It asked questions from seven distinct categories. These categories are operation characteristics, stocker purchases, health management,



production practices and resource base, marketing, and demographics. The survey also encompasses questions on a number of purchasing decisions of a stocker producer. This includes questions such as how many head purchased, how far are they willing to have cattle shipped, method of purchase, background of cattle purchased, and factors determining purchase. The survey had 1,465 respondents. Using the statistical database of the National Ag Statistical Service, this survey is representative of the Oklahoma stocker cattle industry as a whole.

The data in this survey compiled in 2017 gives a new perspective of the Oklahoma stocker industry. Most of the literature has discussed either management practices or buying decisions. This survey is the most comprehensive data available on all aspects of stocker production. The most recent Oklahoma study found in my research was completed in 2008. As with any market, a lot has changed in the last ten years. This survey will differentiate itself from previous literature taking a statistically significant group of stocker producers that will allow us to draw comprehensive conclusions about the Oklahoma stocker industry and permit extension agents to create practical publications from this compendium of information.

Although this stocker survey is limited to Oklahoma, the state is an ideal state to represent the broader national stocker cattle industry. Oklahoma is representative of a wide variety of climates and production systems in its diverse cattle industry. The panhandle of Oklahoma averages 17 inches of annual rainfall while far southeast Oklahoma averages about 56 inches (OCS, 2022). The grazing systems in Oklahoma include short and tallgrass prairie, winter small grain pastures and introduced warm and cool-season forages. These different climatic zones and forage types are representative of

how cattle can be raised and profited on across a variety of locations and production systems.

## CHAPTER II

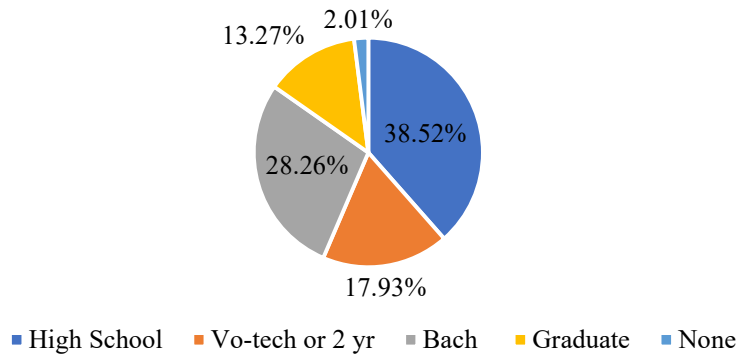
### THE OKLAHOMA STOCKER INDUSTRY

#### **Who is the stocker industry?**

The survey included 1,461 producers and covered a total of 576,989 head of cattle. The survey encompassed producers with 266,114 cows, 120,127 calves, and 19,539 bulls. Sixty-eight percent of farms had less than 250 head of cattle while 17% of farms had greater than 500 head of cattle. The survey was implemented by the National Agricultural Statistics Service (NASS) to be a representative sample of the overall Oklahoma stocker cattle market. Of the cattle producers surveyed, 21% of producers were in the northwest, 29% in the northeast, 23% in the southwest, and 27% in the southeast, as defined by interstates 35 and 40, with only 24% of producers operating in more than one county.

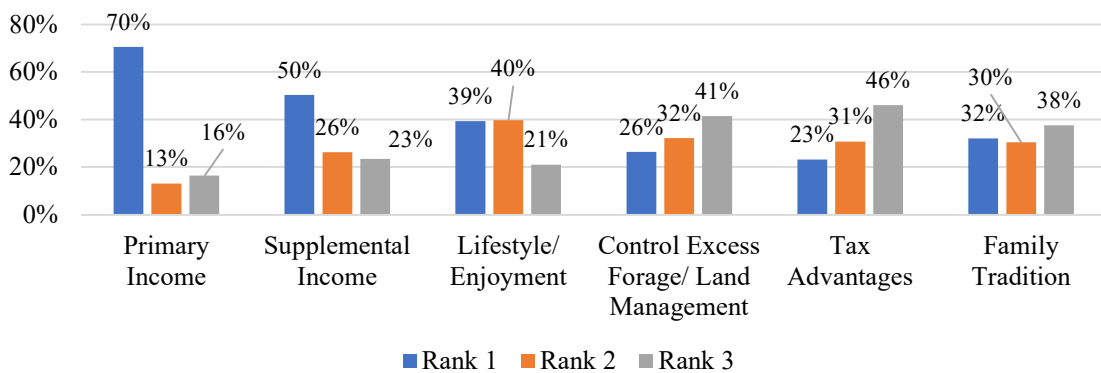
Seventy-three percent of these Oklahoma producers are above the age of 55 while only 3% of producers are in the 25-34 age range. This correlates with the statistic that 72% of producers have been the primary decision maker on their operation for 20 plus years. Eighty-three percent of producers live on their primary cattle operations and 81% of land used for cattle production in Oklahoma is owned land.

Figure 1. Education (Q6.2)



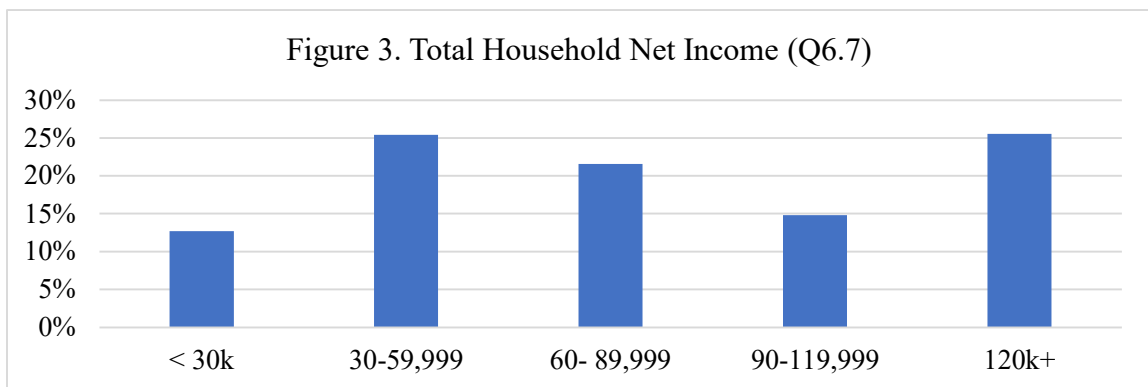
The most common educational background of Oklahoma stocker producers is a high school diploma (Figure 1)<sup>1</sup>. After high school, 28 percent of producers went on to receive a bachelor’s degree, and 13% received a graduate level education. Approximately 2% of producers reported having no educational background. The Beef Quality Assurance (BQA) and Master Cattlemen’s program provides continuing education materials for cattle owners. Fifteen percent and 6% of cattlemen have completed BQA and Master Cattlemen’s, respectively.

Figure 2. Indicate the Importance of Each Factor in Determining Your Stocker Cattle Purchases (Q2.10)



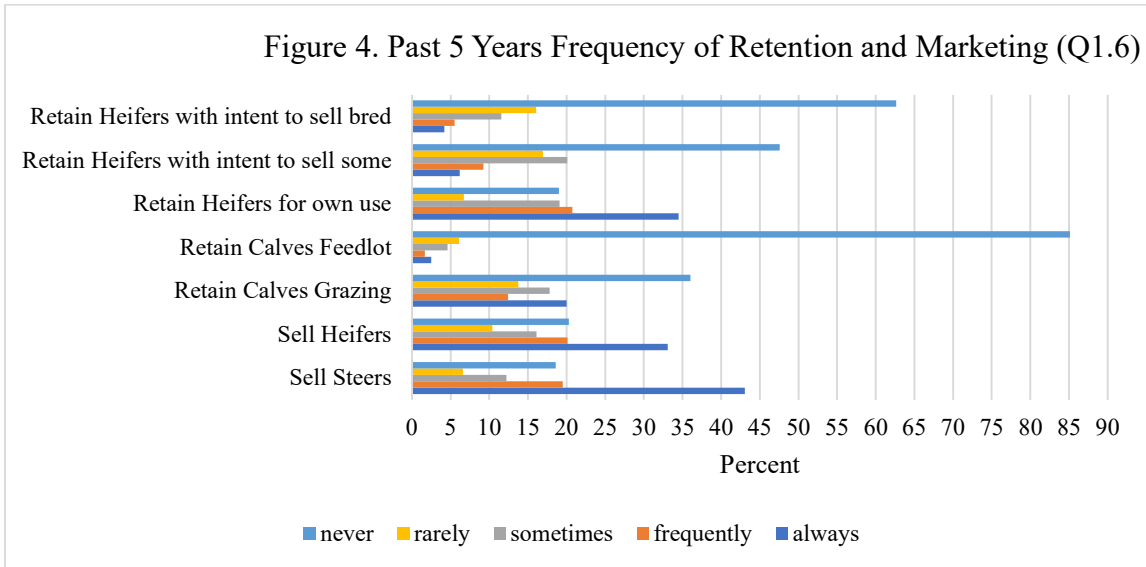
<sup>1</sup> Survey questions are noted in ( ) for Figures 1-28

When asked their motivation to raise stocker cattle, 55% of producers said that they raise cattle as a supplemental income source while 74% of producers said they raise cattle for lifestyle and enjoyment purposes. From the 55% of producers who raise their cattle for supplemental income, 50% listed that as their primary motivation. While of the 74% who raise cattle for lifestyle/enjoyment purposes, 39% listed it as their first motivation ranking, and 39% listed it as their second motivation ranking. When combined together, 51% of producers had family traditions or lifestyle/enjoyment somewhere in their top 3 motivations for cattle raising, while only 35% of the producers listed primary income as their number one motivation (Figure 2). Therefore, the top three motivators of Oklahoma stocker cattle producers are (1) lifestyle/enjoyment, (2) family tradition, and (3) supplemental income.

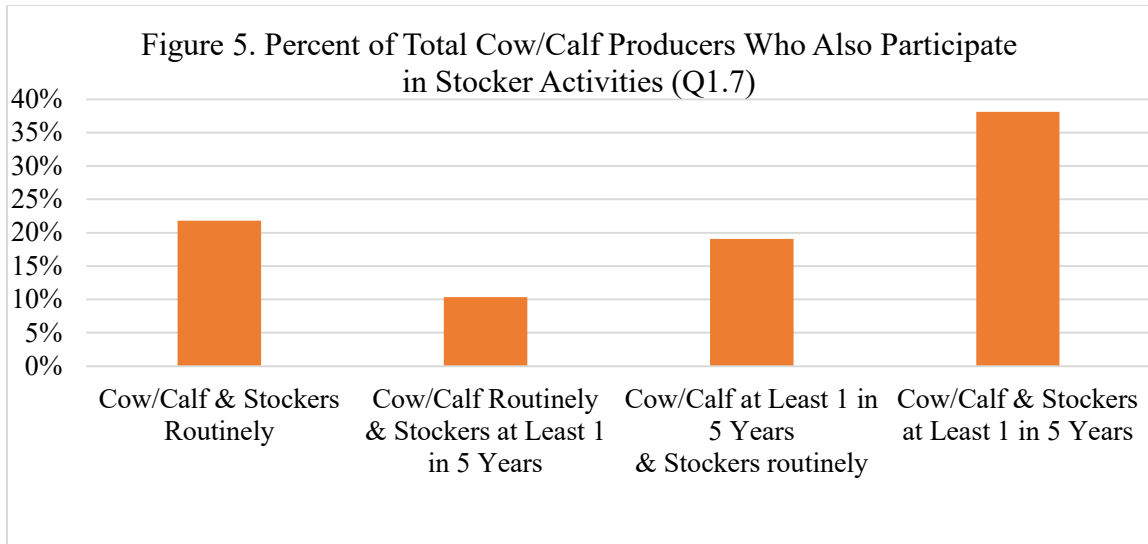


Given the 70% of producers raising cattle for primary income, 57% of producers claim 40% or less of the previous year's income came from their beef operation. This percentage plays into the average household income received by the Oklahoma producers. Twenty-five percent of producers in Oklahoma households have an income which falls into the \$30,000-\$59,999 range while another 25% of Oklahoma stocker producer's income is above \$120,000 (Figure 3). The median U.S. household income is

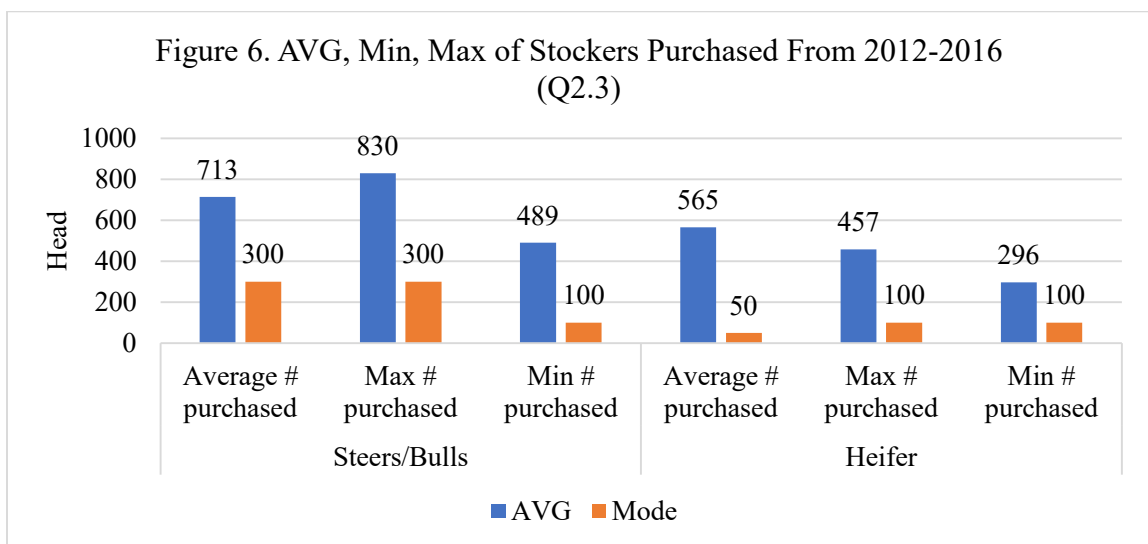
\$60,000-\$89,999 which is slightly above the Oklahoma average of \$52,919, according to the U.S. Census Bureau.



Those income levels are achieved by retention and marketing frequency decisions for specific cattle groups, as shown in Figure 4. Calves are rarely retained for the intent to sell bred or feedlot production, although steers and heifers are almost always sold, and heifers are frequently retained as replacements for private herds. 58 percent of producers in Oklahoma said their most common production activity is to sell weaned calves from a cow-calf operation, 22% of producers claim to participate in both cow-calf and stocker cattle production activities, and 7% participate in only stocker activities.



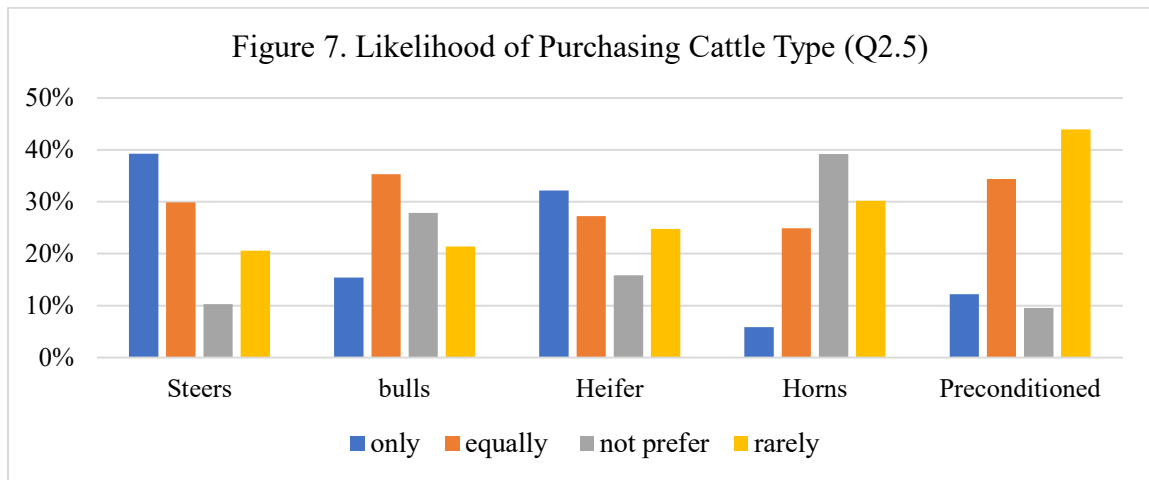
When cow-calf producers are correlated on a routine and a one in five-year basis, 38% of producers end up doing some sort of stocker activity at some point in a 5 year period although they may be unaware of it (Figure 5). When producers were asked why they decided to retain heifers or steers for stocker purposes, the most common response was to take advantage of current market conditions, and the second most common response was to take advantage of feed market conditions. This alludes to the fact that profit maximization is the overarching goal of these producers.



To maximize profitability, these producers purchased, on average, 713 steers and/or 565 heifers per year. The average lot size purchased, indicated by the mode in the data, is 300 head of steers and 50 head of heifers. The maximum and minimum numbers represented in Figure 6 are the averages of the maximum and minimum number of animals purchased at one time indicated by the producers in the survey. This implies steers are the more popular purchase option.

In summary, a typical Oklahoma stocker cattle producer is above the age of 55 with a high school diploma. They raise cattle as their enjoyment source or for supplemental income. Their median income is \$60,000-\$89,999 with 40% of that coming from their beef cattle enterprise. Although their most common production activity is to sell weaned calves from a cow-calf operation, every one in five years, many producers end up doing some sort of stocker activity perhaps unknowingly.

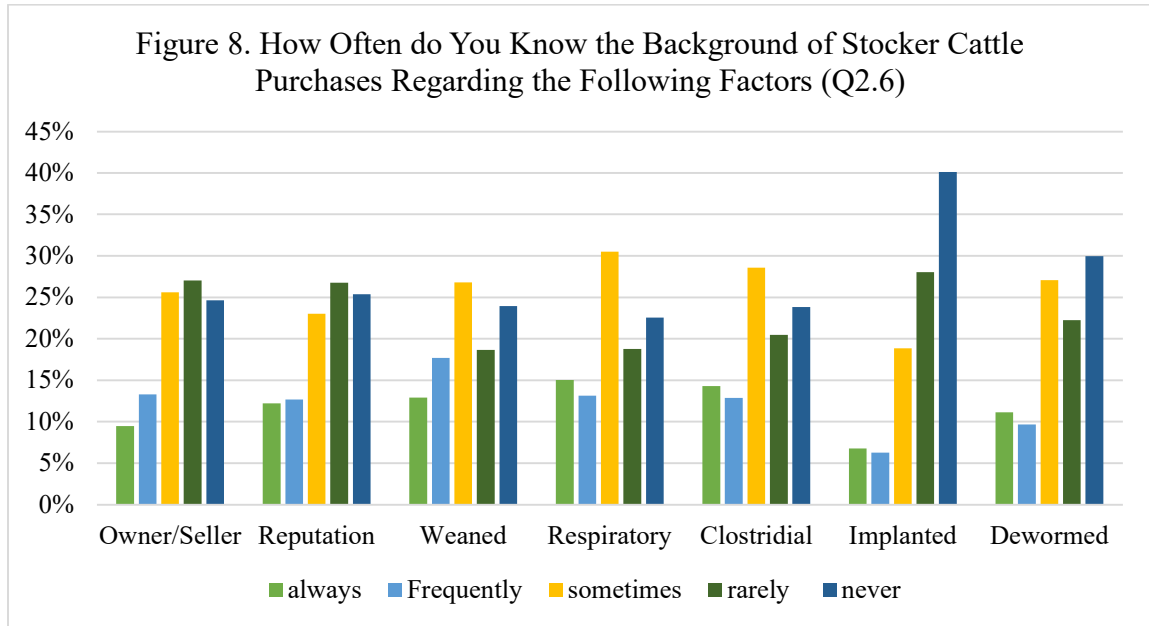
**Stocker Production**



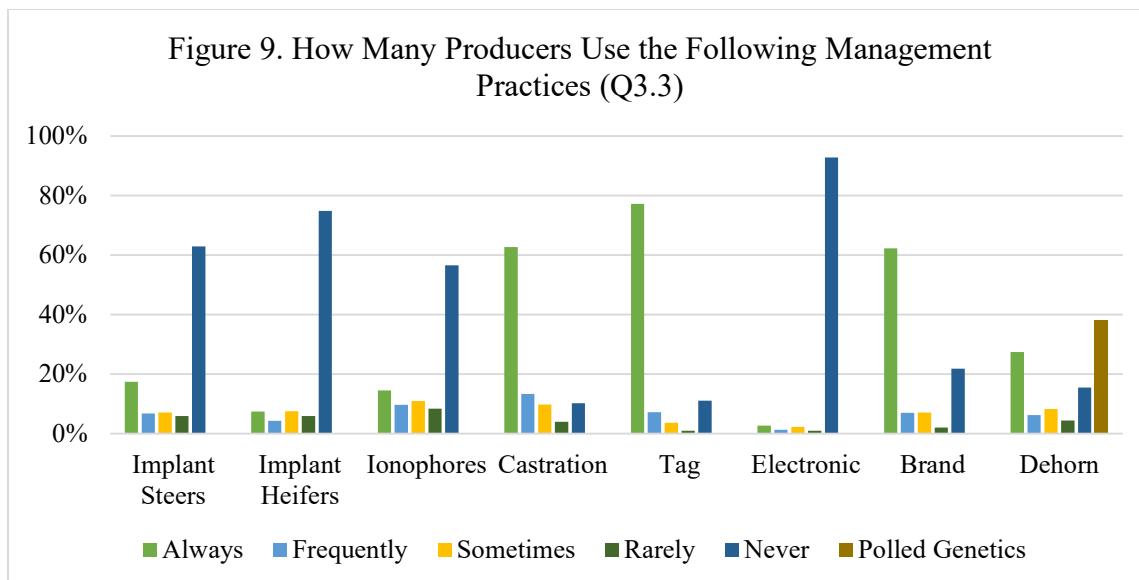
Stocker production begins by the purchasing (or retention) of cattle to be put into a specific management program. Of these purchases, steers are preferred 39% of the time



and heifers are preferred 32% of the time (Figure 7). Horned cattle are not preferred 39% of the time and most producers are seemingly indifferent about preconditioned cattle.



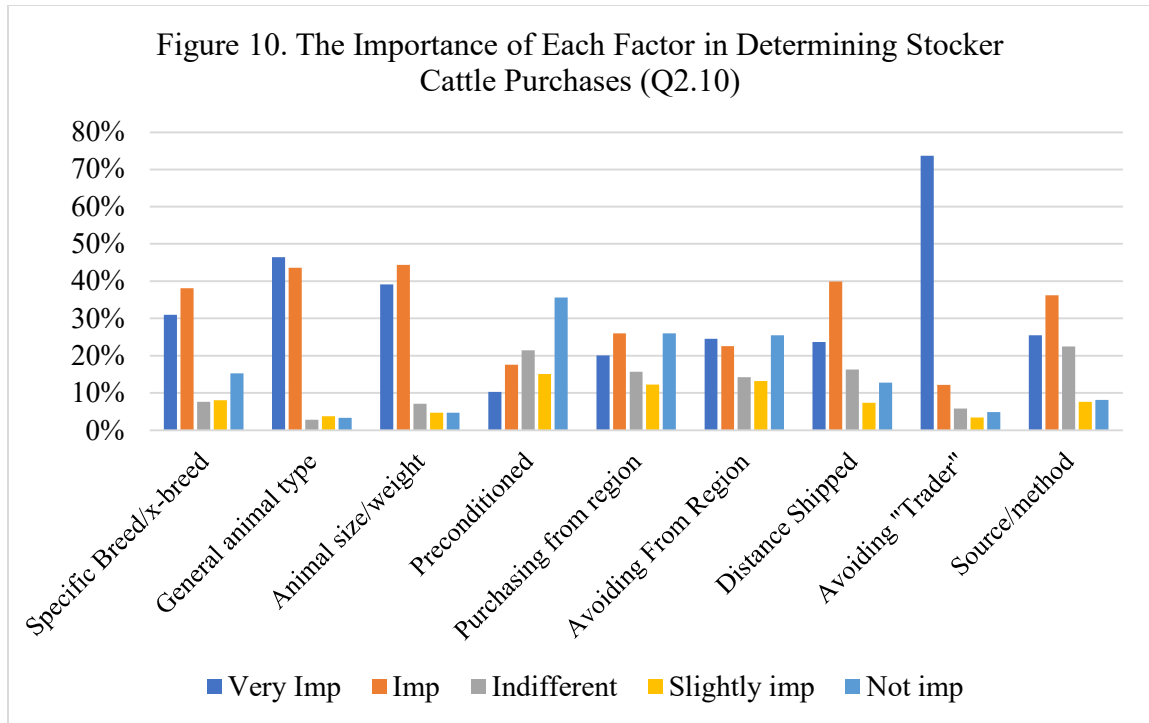
As is shown in Figure 8, producers claim to “sometimes,” “rarely,” or “never” know any of the history of their purchases. “Always” or “frequently” does not rank above any of the other three categories. This is telling in the fact that with auction purchases, producers are typically making a purchase based upon sight and the quick line the auctioneer gives rather than any prior history. These calves are managed in a receiving program for either 14 or 28 days depending on the animal type, and 90% of calves purchased will be commingled with other animals in that time period.



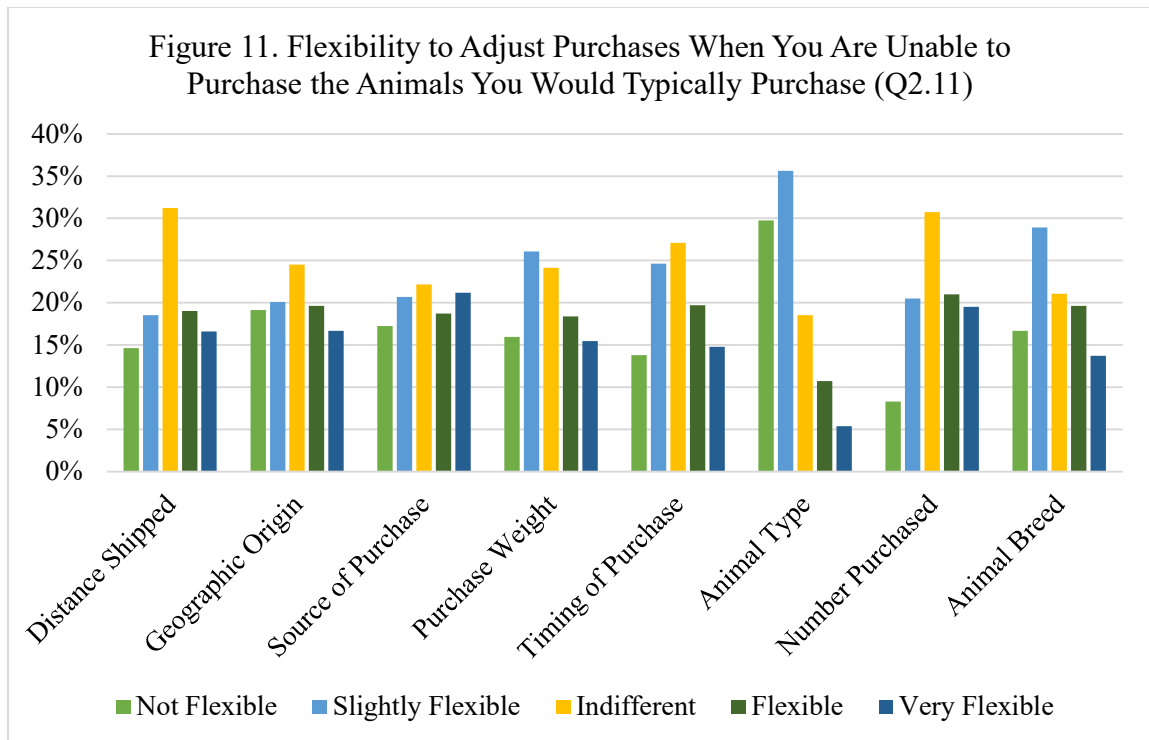
In that receiving program, 62% of producers castrate their bulls, 77% tag, 62% brand, and 92% never use electronic ID on their cattle. This means that traditional identification is still preferred by producers and implants and ionophores are not popular amongst Oklahoma stocker producers. Producers also tend to seek out polled genetics 38% of the time.

The most popular targeted weight gain for stocker producers is 300+ pounds on a 120-179-day ownership period. More than 400 pounds is the ideal weight gain, and less than 200 pounds is only sought after by 40% of producers. The only other ownership period that is remotely acceptable to achieve said weight gain is 180-240 days. In stocker production, a steer who gains more than 300 pounds in 120-179 days is preferred by a majority of producers. This is achieved without always knowing the animal's history from an auction, and they are managed in a 14- or 28-day receiving program where they are castrated (if necessary) and given identification.

## Flexibility in the Stocker Industry

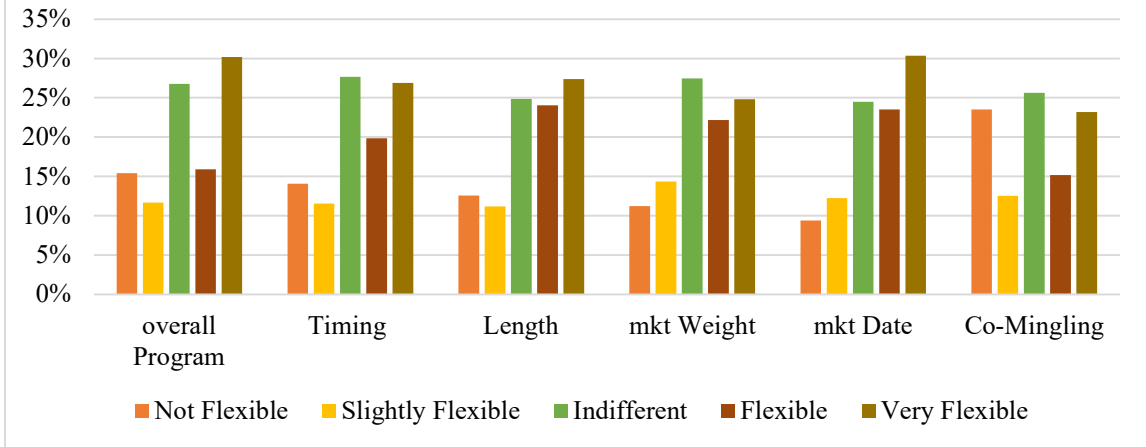


These weight and ownership goals are often skewed by the following factors which can be explained by the level of flexibility a stocker producer allows specific breed, general animal type (frame/muscling), animal weight, distance shipped, and avoiding trader cattle. These are all very important when making a purchasing decision. This shows that stocker producers make informed decisions on purchases given the needs of their operations. Breed, type, and weight are all related to one another. Avoiding spoiled trader cattle is very important for 73% of producers. Preconditioned cattle and the region in which the cattle came from are not important factors for cattle purchases (Figure 10). The decisions to retain calves for stockers and to purchase additional stockers is heavily based on the cattle market while a producer's decision to retain heifers for their own use or to retain heifers to sell later is largely dependent upon necessity.



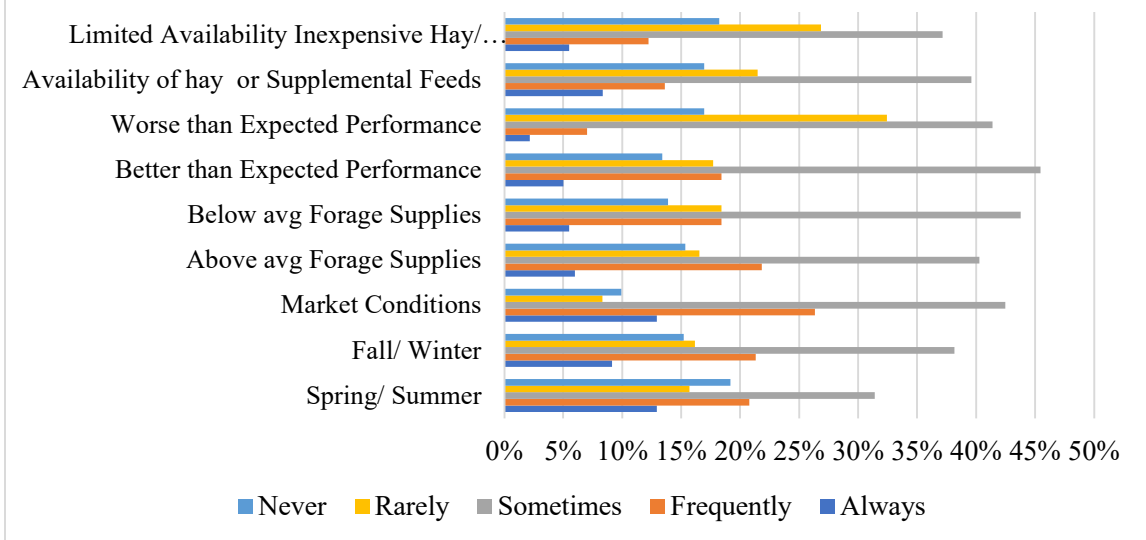
When it comes to producer’s flexibility, they are evenly weighted in “indifference” except for the animal type. This correlates to the important purchasing factors lined out in Figure 11. The indifference noted in Figure 11 explains how a stocker producer will take that which they think will turn a profit given their management parameters. Therefore, when a stocker producer is truly playing a margins game then Figure 11 describes them perfectly.

Figure 12. Flexibility to Adjust Program Characteristics (Q4.5)



Stocker cattle producers have proven time and again their flexibility in management decisions. The only program characteristic with less flexibility is the commingling protocols. This is likely due to the need to keep size, genders, or lot numbers separate for marketing purposes. The rest of the variables listed in the Figure 12 indicate considerable flexibility, including market date and weight, which is not always the case for cow-calf or feedlot producers.

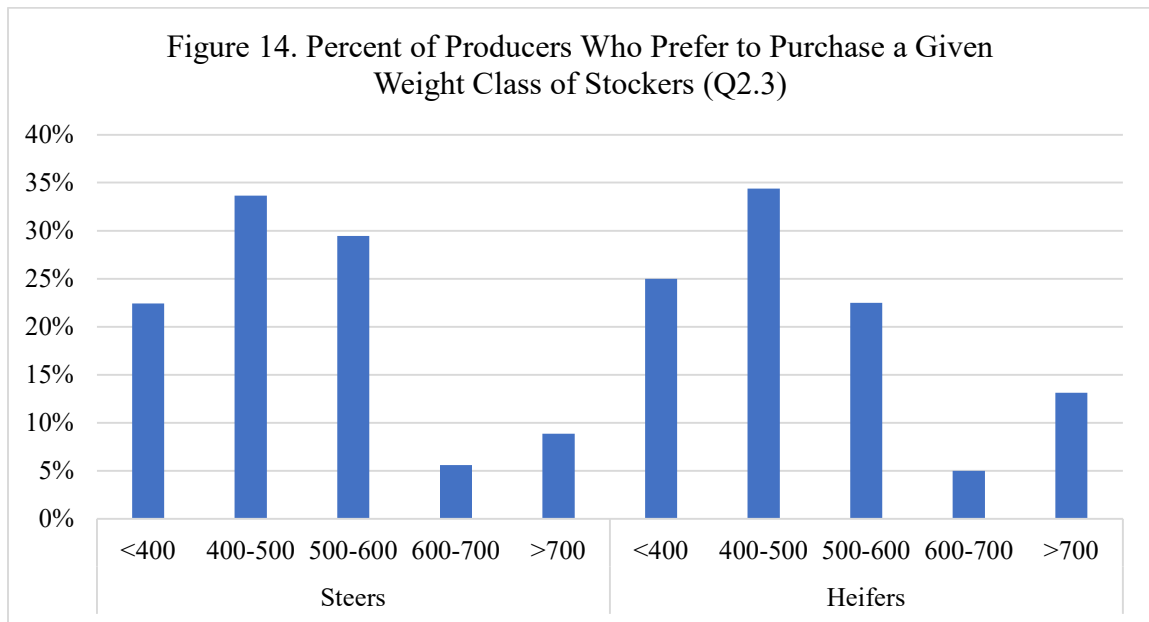
Figure 13. Frequency the Targeted Sale Weights or Marketing Dates are Significantly Altered by the Following Scenarios (Q4.11)



All the conditions listed in Figure 13 occur “sometimes” to over 30% of producers, with market conditions “always” affecting producers the most. The amount of forage available is another large factor in determining marketing goals for stocker cattle operations.

This section confirms that ultimately stocker producers practice flexibility in order to achieve the highest profit margins. As shown in Figure 13, market conditions affect producers the most. Also shown in the above graphics, producers are willing to purchase and market a variety of animals with the exceptions of trader cattle and horned cattle. The amount of indifference noted by the figures in this section is remarkable and is connected to Chapter 3 of this thesis. The findings of that paper were that a stocker producer cannot be pinned down to a specific profile of purchases or activities, and those results agree with these figures.

**Stocker Purchases and Marketing**



Described in Figure 6 above, the mode number of cattle purchased was 300 head of steers and 50 head of heifers. The distribution of the cattle purchased was consistent over all weight classes except for 600-700-pound animals. Figure 14 represents the preferences of cattle weights purchased by producers. Thirty-four percent of producers prefer to purchase 400-500-pound steers and heifers, 29% prefer to purchase 500-600-pound steers, and 23% prefer to purchase 500-600-pound heifers.

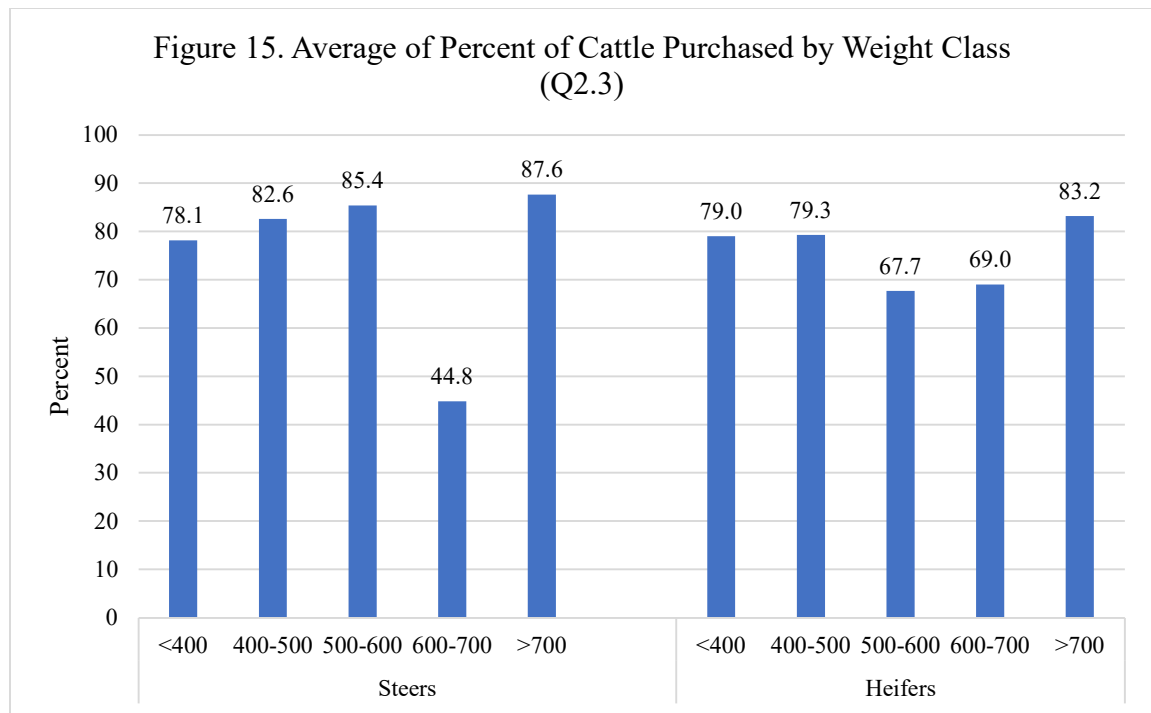
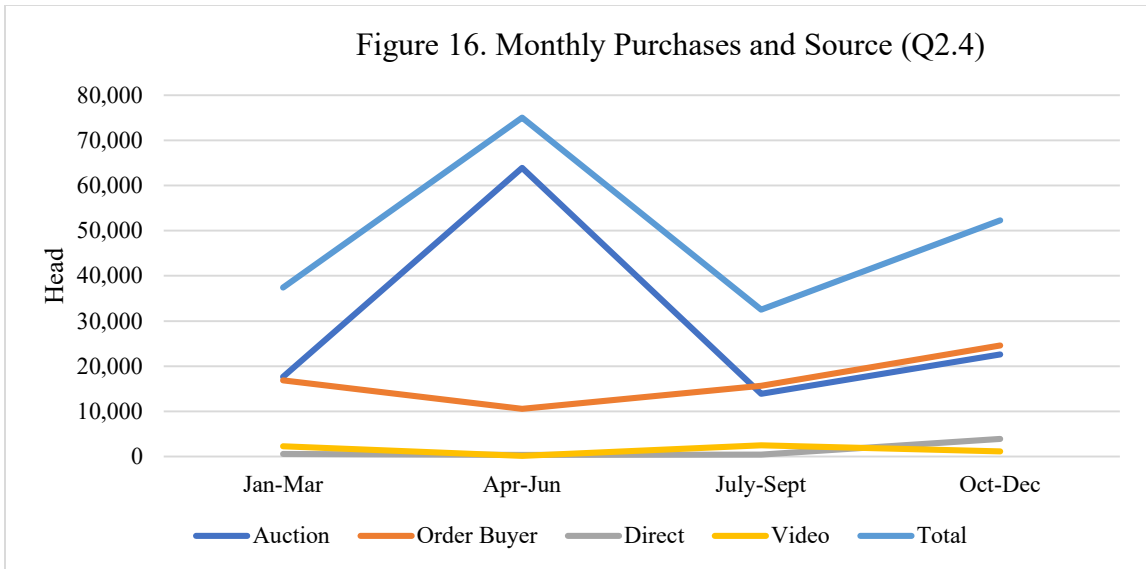
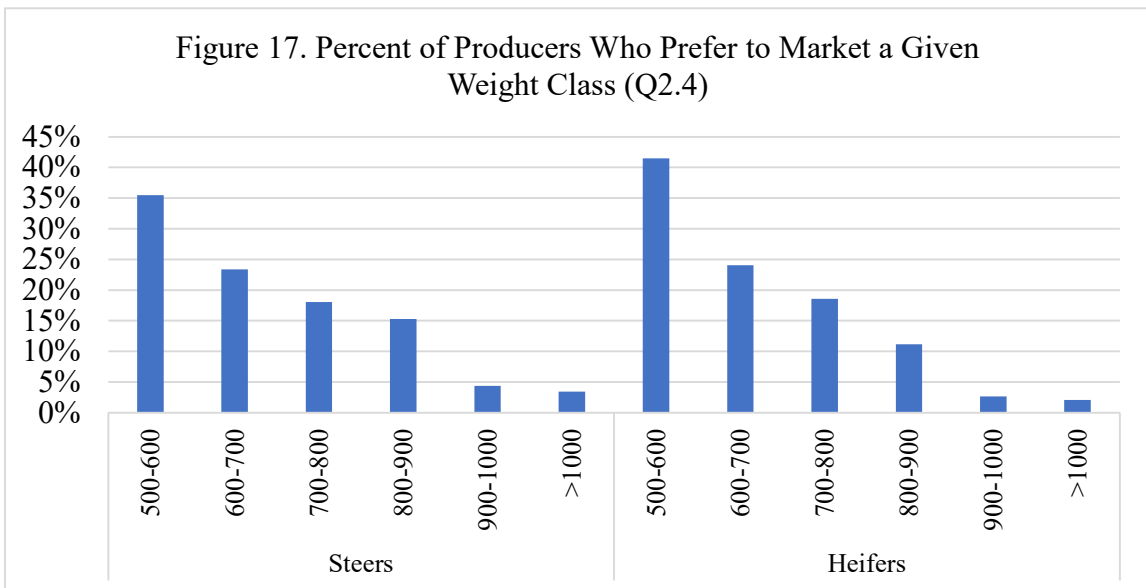


Figure 15 shows that of the 34% producers who buy 400–500-pound steers, they represent 85% of the purchased animals at this weight. Producers who purchase 500–600-pound heifers purchase them 67% of animals in this weight range. This shows that while it varies across producers which cattle size is preferred, producers typically consistently purchase the same weight category.



The most popular purchasing source is auction from April to June. In the winter months, the utilization of order buyers is slightly greater than direct auction purchases while video and direct to customer sales both have low volumes of cattle being purchased through these channels. The average load size bought at an auction is 25 head and the average load bought from an order buyer is 40 head. The median number of miles traveled by the cattle purchased from an auction is 61-150 miles.





Steers and heifers, in Figure 17, decline in the number of producers who market in given a weight class as the weight of the animal increases. The most popular animal to sell was the 500–600-pound calves, which correlates to a large number of respondents being cow-calf producers. The 700-900-pound class of animals are the common marketed weights after a stocker program, while 900-pound plus cattle have less than 5% of producers who market that size.

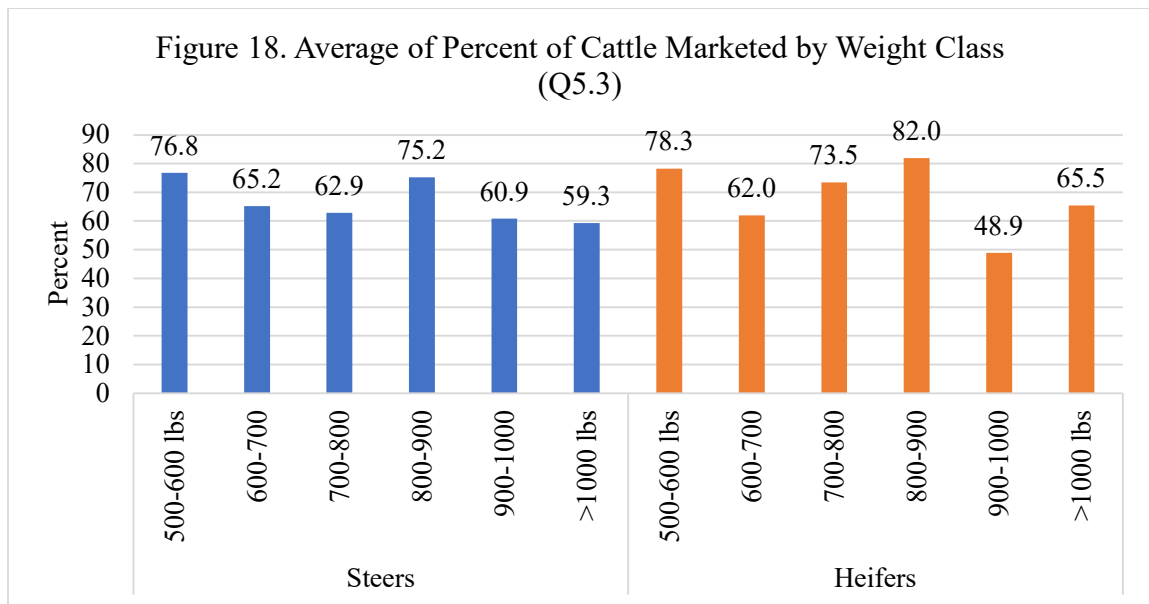
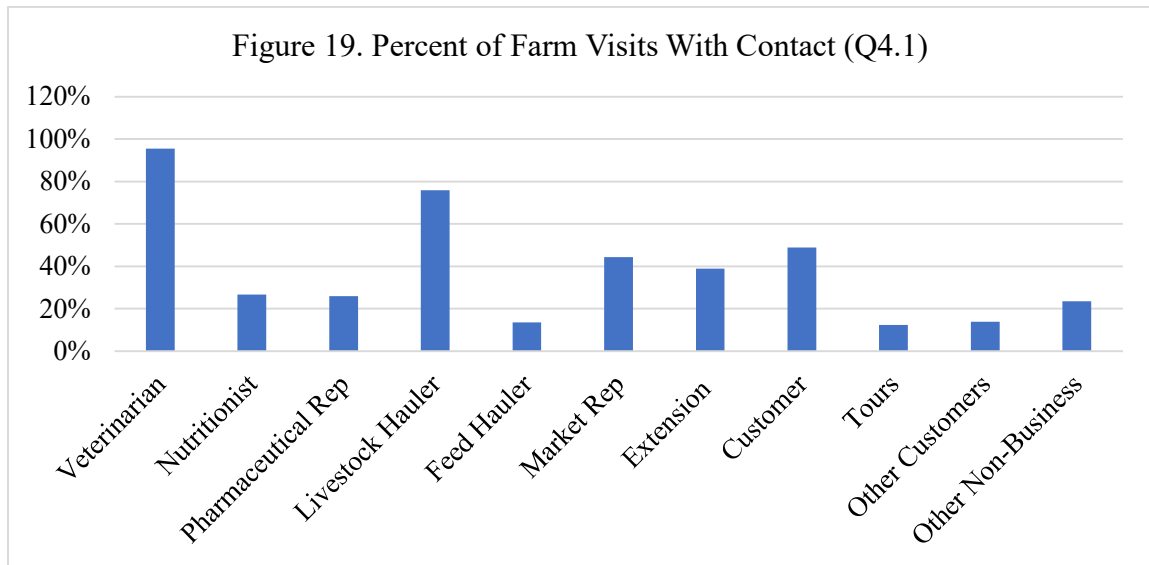
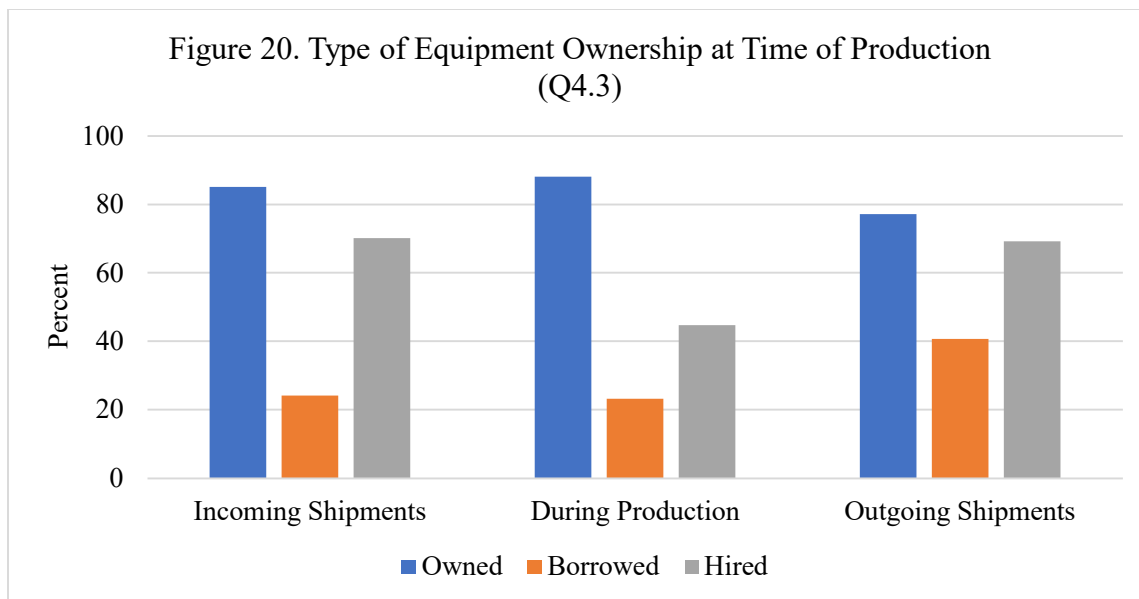


Figure 18 shows the cow-calf producers working as stocker cattle producers as they sell 500-pound calves at weaning, but they are also selling 800-pound cattle after some time in a post-weaning program. Eighty-six percent of stocker cattle sold in Oklahoma are marketed in lots less than a semi-truck load. Twenty-nine percent of stockers sold have a destination that is across state lines. The average load size sold at an auction is 19.5 head which would equate to about a 32-foot gooseneck trailer load. The average direct to customer load is 82 head, which is about a semi-truck load.

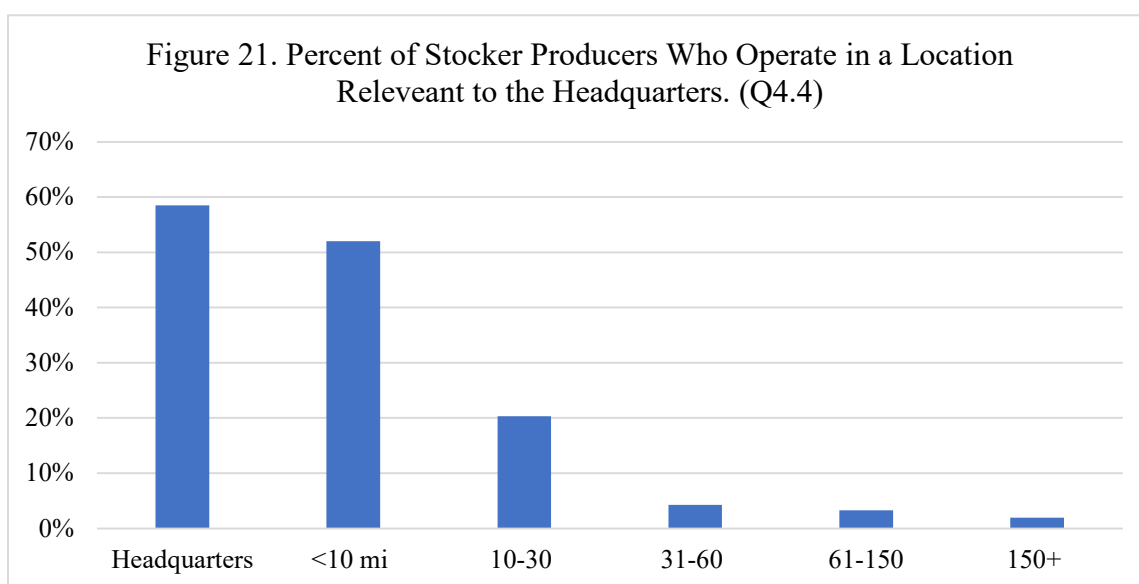
## Resources Used

Resources vary from equipment used, acres leased, forages used, and human resources. All these aspects are important in explaining the differing management techniques of Oklahoma stocker cattle producers. Firstly, the human resources can be explained by the amount of contact a producer has with a given entity. For example, 95% of producers have contact with a veterinarian in a given year and 75% have contact with a livestock hauler (Figure 19). Less than 30% of producers have contact with a nutritionist or a pharmaceutical representative. Almost half of the producers have on-farm contact with customers and 12% of producers do tour groups. Thirty-nine percent of Oklahoma stocker cattle producers had a visit from an extension agent on their farm.

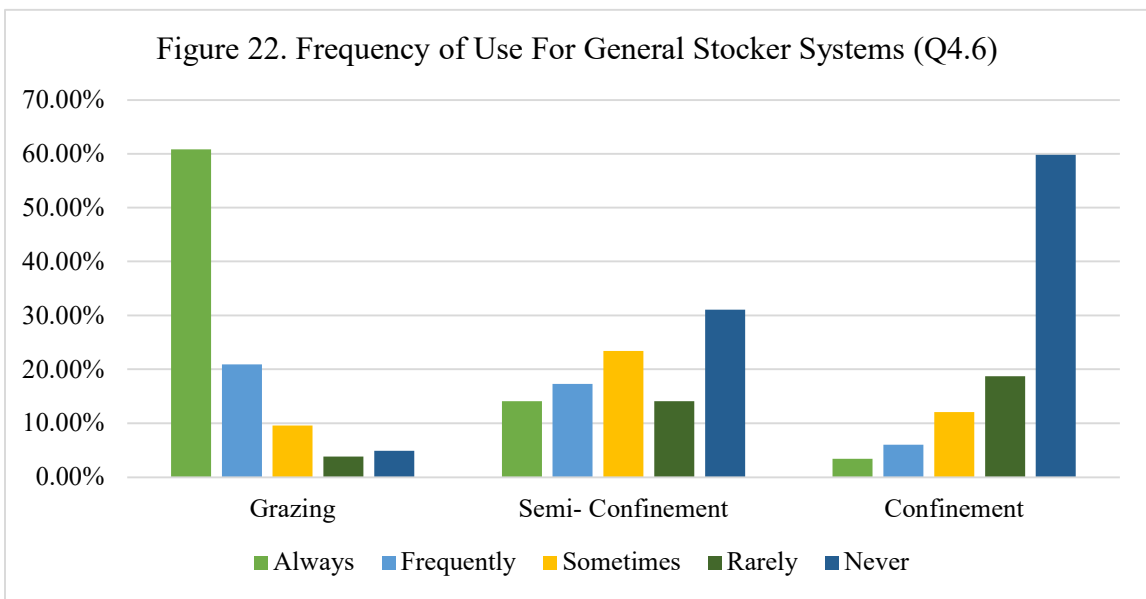




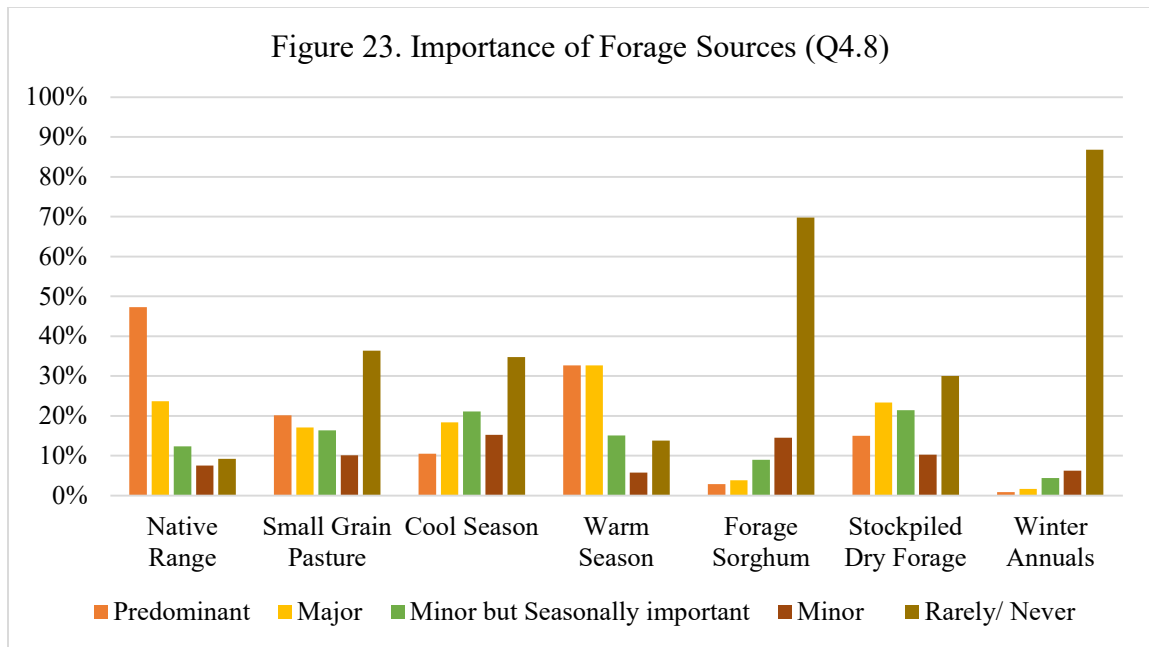
Besides people, equipment is another important resource for cattle production. Figure 20 shows that the amount of hired equipment increases for both incoming and outgoing cattle shipment time periods. Also, the amount of borrowed equipment increases for outgoing shipments, which means that producers rely more on outside equipment to market their cattle. During the time of production, most producers have established infrastructure and use primarily owned equipment.



In a production period, a large amount of ranch work occurs near the operation’s headquarters. Seventy-three percent of producers had 100% of production within 10 miles of their headquarters, and 3.3% of producers had 56% of their production 61-150 miles from their headquarters (Figure 21). This means that as a baseline stocker producers operate heavily out of a “homebase.”



Utilization of pasture is confirmed by Figure 22 which shows that over 60% of stocker cattle producers are primarily grazing operations and 60% of producers never use total confinement. This demonstrates that the most popular backgrounding technique is grazing in Oklahoma. Forty percent of producers graze year-round while 33% of producers say they never graze in the winter months and run a primarily summer operation.

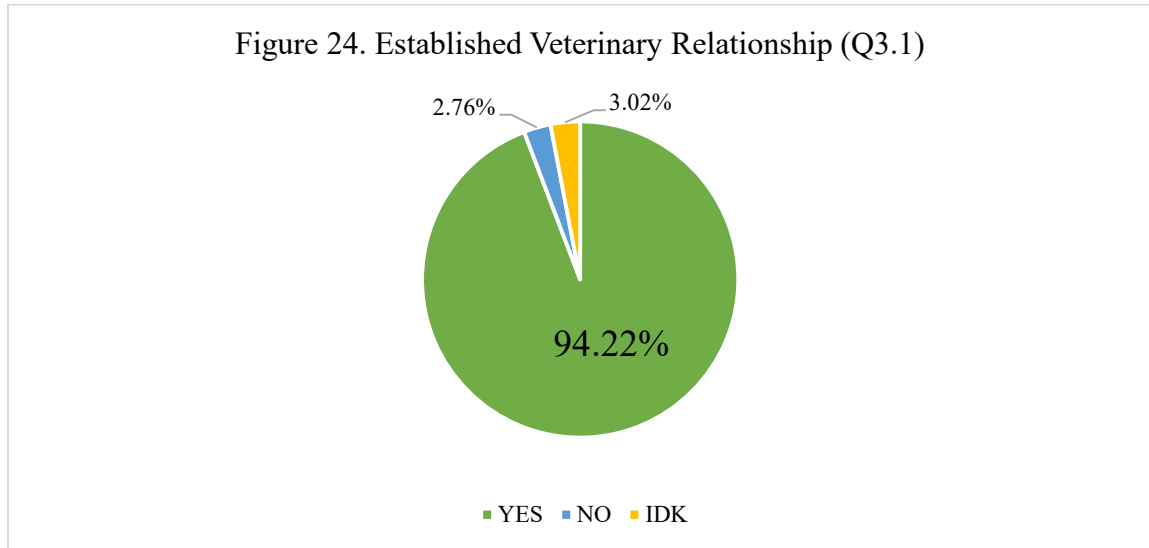


On these grazing systems, the forage types selected by producers match the rangeland and climate of Oklahoma. The pastures have a heavy native grass influence and little to no winter forage besides small grains (Figure 23). Producers are more likely to “rarely/never” rely on small grain pastures than they are to rely on them at all.

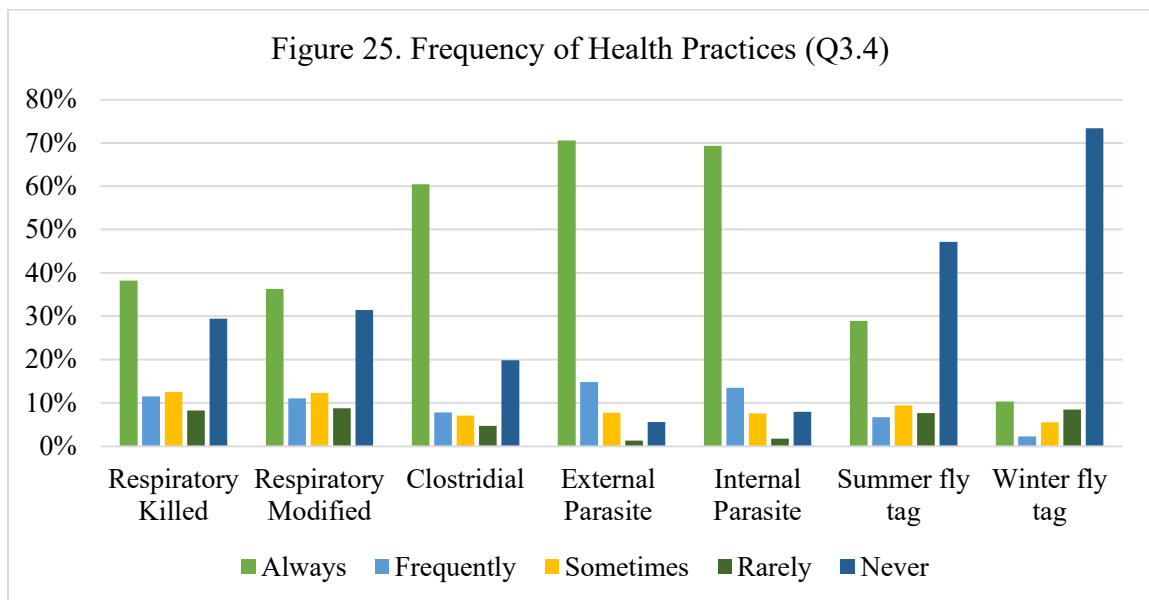
### **Animal health and Biosecurity**

As mentioned earlier, cattle are typically kept in receiving programs for 14 or 28 days. Details like this one are important for management practices, but also important for animal health and biosecurity. After the receiving program is completed, a common production activity for stocker producers is moving between nonadjacent pastures. Cattle are shipped between production locations “zero times” 30% of the time and two or less times 50% of the time. While this is a good practice in utilizing resources, moving cattle around proves to be a biosecurity risk. Purchased cattle are processed in the same location as owned cattle 57% of the time, and they graze the same pastures as owned

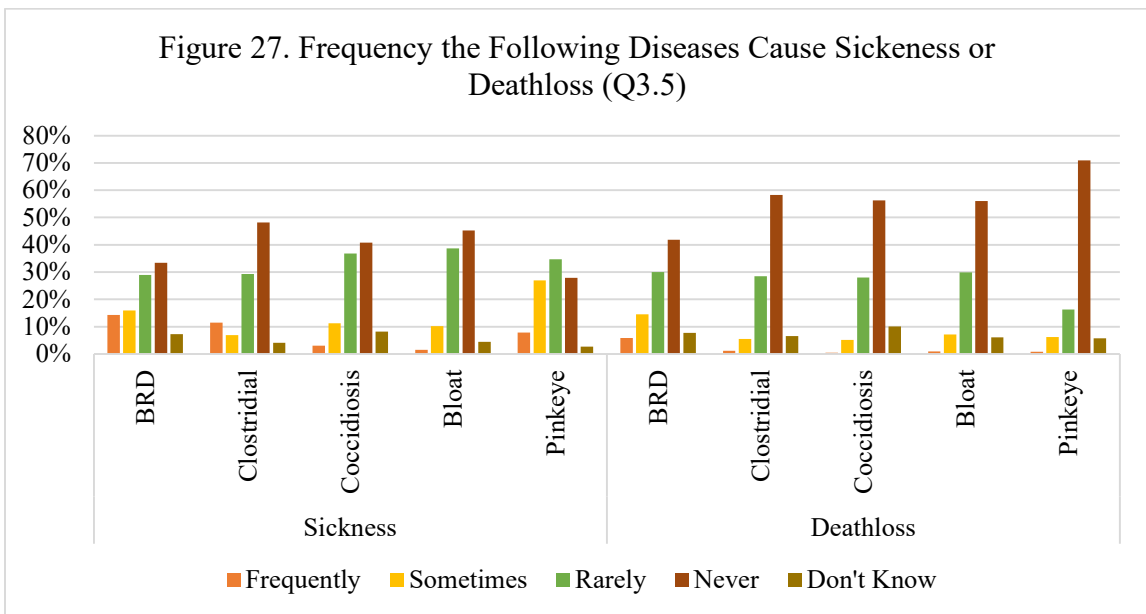
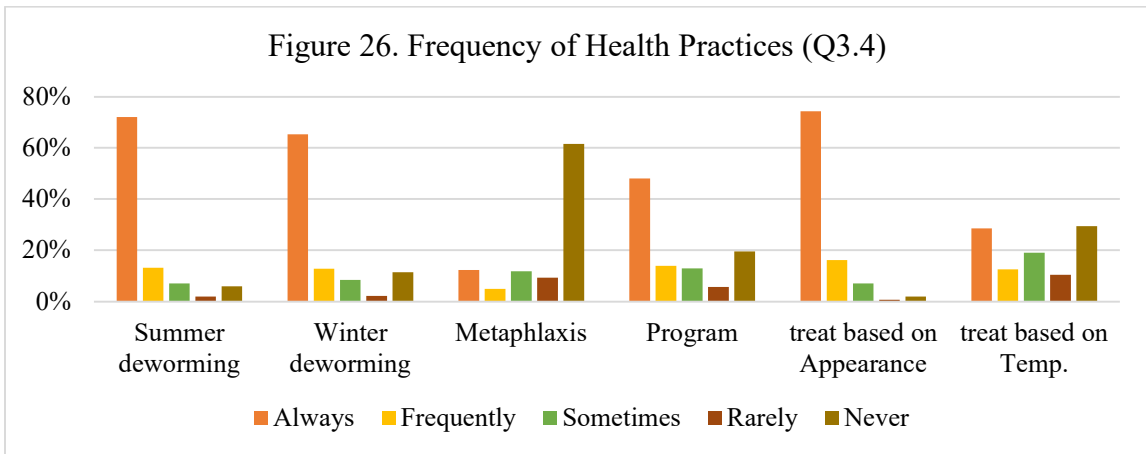
cattle 46% of the time. A pasture quarantine between purchased cattle and owned cattle is observed 38% of the time, but it is rarely or never observed 40% of the time.



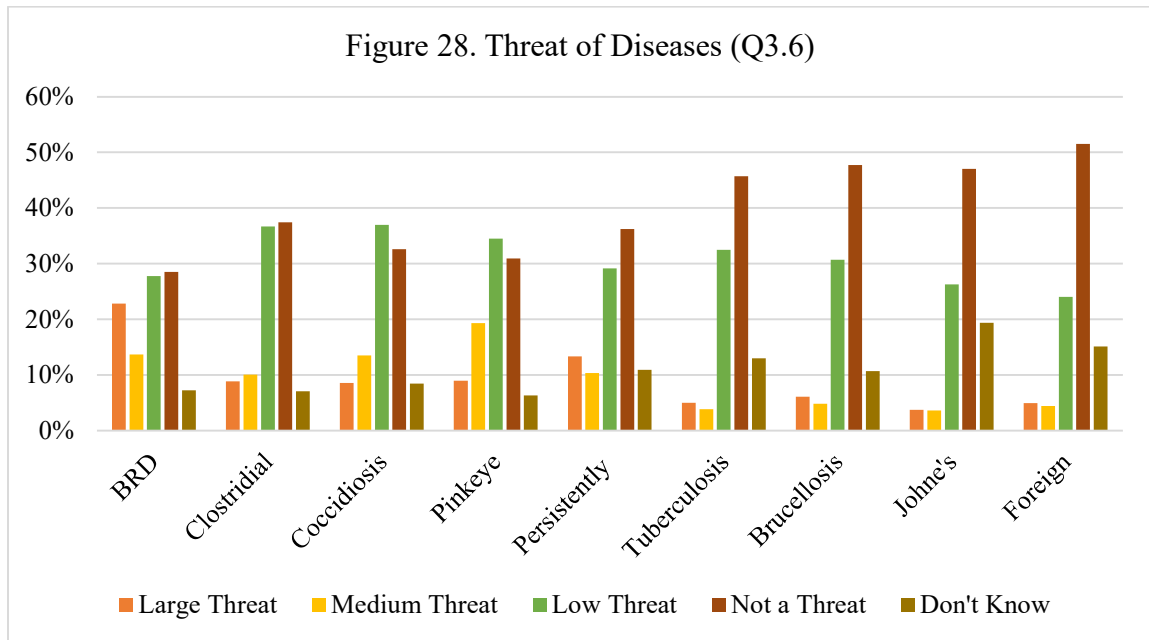
In an effort to maximize animal health practices almost all stocker cattle producers in Oklahoma have an established veterinary relationship (Figure 24). While 52% of producers know and are prepared to comply with the requirements of the Veterinary Feed Directive, 25% of producers have not heard about this program.



Over 50% of producers use Clostridial vaccines, and 70% treat for both internal and external parasites (Figure 25). Respiratory vaccines are used by a more focused group of producers. Practices that are not practical, such as winter fly tagging are not used by 73% of producers. Over 50% of the time, producers both summer and winter deworm, follow a specific program for treatment, and treat based on appearance (Figure 26). Metaphalaxis is not a popular health management practice due to the high cost of mass dosing a whole herd.



Even with proper health management techniques and vet protocols, sickness and death loss still break through herds. Bovine respiratory disease is listed as the disease with the potential to cause the highest economic impact for cattle producers while coccidiosis and bloat are the second and third most common causes of financial loss (Figure 27). A notable most common “other” threat to cattle death loss written in by producers was foot rot. Ten respondents also wrote in anaplasmosis, which shows it is still a problem amongst older cattle in our state, but not widespread.



BRD, pinkeye, and persistently infected BVD cattle are a medium to large threat for 35, 28, and 23% of producers, respectively (Figure 28). While Brucellosis, Johne’s, and foreign diseases are a problem for less than 10% of producers, they do still pose a threat in the Oklahoma industry. The average morbidity rate for Oklahoma stocker cattle producers is 5.8% and the average death loss is 2.3% of a given ranch herd.



Animal health management is important in any livestock enterprise but is especially crucial in the stocker industry. This is due to the dynamic and faster paced conditions that the Oklahoma stocker industry presents. Since cattle are moving between ranches, commingling with other cattle, and typically experiencing weaning at the same time, they pose a great challenge for producers to manage their health. A relationship with a veterinarian is a crucial part of a successful operation. Many operations also partake in several different vaccinations and parasite control measures to reduce the risk of death loss and disease spread.

## CHAPTER III

### STOCKER INDUSTRY PRODUCTION AND MARKETING FLEXIBILITY TO ENHANCE BEEF INDUSTRY COMPETITIVENESS

#### **Research Objectives**

The general objective of this paper is to examine the survey data to profile individuals participating in the Oklahoma stocker cattle industry. The purchasing characteristics that are desirable by stocker cattle producers were identified. This will be used to provide knowledge to producers when making marketing decisions in an effort to support increased profitability.

#### **Methods and Procedures**

By exploring significant trends in the categories listed above, the following hypothesis was tested: a given combination of production practices, identified in the survey, will lead to the likelihood of purchase for a given group of cattle. The cattle types are steers, uncastrated males (bulls), heifers, horned cattle, and certified preconditioned cattle. The purchasing preferences are exclusively purchase, equally acceptable purchase, not preferred but acceptable, and rarely or never purchase. Logistic regression was used to estimate the probability of cattle purchases conditioned on production practices. The

model is similar to Schumacher, Peel, and Raper (2017). The model is as follows:

(1)

$$(D)_{pi} = \frac{e^z}{1 + e^z}$$

$D$  is the probability of the cattle purchase  $p$  by producer  $i$ . The constant  $e$  is the base of the natural logarithm. The production practice variables are included in the linear index

$Z_i = \alpha + \beta x$  where  $X$  includes:

(2)

$$\begin{aligned} Z_{pi} = & \alpha + \sum_{j=0}^1 \beta_{1j} \text{Agegreat54} + \sum_{j=0}^1 \beta_{2j} \text{EduBach} + \sum_{j=0}^1 \beta_{3j} \text{IncG60k} \\ & + \sum_{j=0}^1 \beta_{4j} \text{G200lb} + \sum_{j=0}^1 \beta_{5j} \text{G120days} + \sum_{j=0}^1 \beta_{6j} \text{SpringSum} \\ & + \sum_{j=0}^1 \beta_{7j} \text{MktCond} + \sum_{j=0}^1 \beta_{8j} \text{AboveAVGforage} \\ & + \sum_{j=0}^1 \beta_{9j} \text{BetterAnimalPerf} + \sum_{j=0}^1 \beta_{10} \text{FeedAvail} \\ & + \sum_{j=0}^1 \beta_{11j} \text{BRDsick} + \sum_{j=0}^1 \beta_{12} \text{Clostsick} + \sum_{j=0}^1 \beta_{13} \text{Coccisick} \\ & + \sum_{j=1}^1 \beta_{14j} \text{Bloat} + + \sum_{j=0}^1 \beta_{15j} \text{Pinkeye} \end{aligned}$$

The variable  $Z_i = 1$  for the purchase of a specific cattle type  $p$  and 0 for non-purchase. The independent variables and the dependent variables ( $p$ ) are described in

table 2. The independent variables were chosen from the survey questions which followed a Likert scale format (1-4).

**Table 2. Variable names, definitions, and units used in the logit model.**

<b>Variable name</b>	<b>Units</b>	<b>Definition</b>
<b>AgeGreat54</b>	Years	Producers age greater than 54 years old
<b>EduBach</b>	Education level	Producers with a college education or better
<b>IncG60k</b>	Dollars	Producers with an income greater than \$60k
<b>G200lb</b>	Pounds greater than 200	Targeted weight gain
<b>G120days</b>	days	Grazing > 120 days
<b>SpringSum</b>	Season	Grazing in spring and summer
<b>MktCond</b>	Market Price	Cattle market condition at a given time
<b>AboveAVGforage</b>	Forage level	Forage supplies are above average
<b>BetterAnimalPerf</b>	Animal rate of gain	Animals' performance is better than expected
<b>FeedAvail</b>	Feed market	Availability of inexpensive hay or supplemental feeds
<b>BRDsick</b>	Sickness frequency	Cattle are frequently sick with BRD
<b>Clostsick</b>	Sickness frequency	Cattle are frequently sick with Clostridial
<b>Coccisick</b>	Sickness frequency	Cattle are frequently sick with Coccidiosis
<b>Bloat</b>	Sickness frequency	Cattle are frequently sick with Bloat
<b>Pinkeye</b>	Sickness frequency	Cattle are frequently sick with Pinkeye

The marginal effect for (0,1) variables are

(3)

$$\Pr (N = 1 | X = 0, x_k = 1) - \Pr (N = 1 | X = 0, x_k = 0)$$

Where  $X=0$  is the vector of production practices set to a base level and  $X_k$  is the practice characteristic of interest. The marginal effect for continuous variables is:

(4)

$$\frac{\partial \Pr (y = 1)}{\partial X_k} = \beta_k \cdot \hat{P}(1 - \hat{P})$$

Where  $\hat{P}$  is the predicted probability. Separate logistic models were developed for each cattle type and purchasing preference for the cattle type. The combination of cattle type and purchasing preference leads to a total of 20 different logistic models and marginal values for the production practices. For each of these models, the log likelihood, pseudo  $r^2$ , and sample size are reported (Greene 2012). The Wald test for the parallel slopes assumptions was also used to determine if the proportional odds/ parallel lines assumption was violated (Long 2014). The results found that none of the models violated that assumption. The marginal values quantified by the models were used to determine which practice has more influence over a given purchase decision. The marginal values were tested at the 10% level. With this information, a consensus of desired cattle production traits was developed.

## **Results and Discussion**

The results from the logit margins provided fewer significant production practices than expected. This shows, due to such low amount of significant practices, how much stocker producers are flexible in their production choices, and how difficult the specifics are to pin down in this industry. The calculated margins, their standard error and p-value, are reported in Appendix Table 1-5 for steers, bulls, heifers, horned cattle, and certified precondition cattle. Looking at the choice to exclusively purchase one type of cattle,

<<Appendix Table 1-5>>

“option 1” in the survey, the likelihood that producers will purchase steers goes up if their household net income was greater than \$60,000. There was also a positive impact on steer purchases if the animal’s performance was better than expected. Bulls also had a positive significance if the household income was greater than \$60,000, but if the market conditions were uncertain then the likelihood of a bull purchase was affected negatively. Purchasing only heifers was again positively impacted by income and better than expected animal performance. Although, if the forage supplies were above average for a producer, then the likelihood of a heifer purchase was given a negative marginal effect. Income was again a positive factor in the purchase of certified preconditioned cattle, but if the purchase was for spring and summer grazing then that factor had a negative marginal impact on the probability of purchase. Lastly, for the choice of exclusively purchased is horned cattle. The only positive marginal impact on horned cattle was the presence of inexpensive hay or feed supplements.

Given that income had a positive impact on four of the five cattle groups, it can be deduced that if a producer has a higher net income level, they are more focused in their stocker cattle purchasing decision possibly exclusively buying one type of stocker over another. Steers and heifers both were impacted by the presence of above average animal performance. The logical reasoning behind that would be if the animals the producer is buying are performing well, then they should purchase more of those animals. Also, for heifers the negative impact of the above average forage conditions could be linked to the size of heifers being smaller than steers. Thus, if forage is better, the producer would want a better gaining animal to maximize their production. The negative effect presented for bulls with uncertain market conditions can be described as bulls being a higher risk

purchase, so with less certainty in the market the producers seem to favor less risk. Stookey (2000) found that cattle with horns are less desirable. Therefore, the small positive marginal affect for readily available feed makes sense. It says if there is plenty of feed then a producer will look at purchasing this less desirable horned animal.

Now going to the other extreme, from “exclusively purchase” to “rarely or never purchase,” there was less marginal affects for the cattle groups. This in itself can be interpreted by the very definition of a stocker cattle producer. From other parts of the survey, it is noted that stocker producers will purchase a variety of cattle if the price margin is profitable. This leaves few cattle to fall into the “never purchase” category. Although, for steers the presence of Clostridia diseases (blackleg, tetanus, etc.), and for bulls the presence of a pinkeye problem both had a positive effect on the likelihood to never purchase these animals. Bulls also had a negative marginal effect for education greater than a bachelor’s degree. An explanation for this could be that a producer with more animal science education may be better equipped with knowledge to handle bulls, and therefore a higher education would lead to less of a likelihood that bulls are never purchased. The final significant margin for “never purchase” can be seen with horned cattle, and again the availability for feed has a positive impact, which contradicts the prior margin for “exclusively purchase.” A conclusion can be drawn that producers may be indifferent between purchases if the availability of feed resources is abundant.

The middle two categories, “equally acceptable” and “not preferred but acceptable”, tell the same story as the other purchase decisions. If feed is readily available, it seems to create some indifference for both steers and heifers with it having a positive impact on the likelihood of an equally acceptable purchase. If steers have to be

kept greater than 120 days the marginal impact for that purchase being equally acceptable is negative, and for the purchase being not preferred is positive. These two margins complement each other by saying that keeping steers long term is not a desired practice. Heifers have a negative marginal likelihood for better than expected animal performance which compliments the positive impact it had on the “exclusively purchase” decision. These assumptions drawn from the marginal likelihood of a purchasing decision on a given cattle type have provided some explanation of the interworking of a stocker cattle producer’s decision-making process. The results for the common model diagnostic tests the pseudo r2, log likelihood, and sample size are presented in Table 3.

**Table 3: Model Statistics**

<b>Model</b>	<b>Sample Size</b>	<b>Pseudo R2</b>	<b>Log Likelihood</b>
Steers Only	1461	0.037	-298.8
Steers Equally Acceptable	1461	0.049	-241.77
Steers Not Preferred but Acceptable	1461	0.056	-102.22
Steers Never Purchased	1461	0.05	-181
Bulls Only	1461	0.056	-141.75
Bulls Equally Acceptable	1461	0.028	-276.09
Bulls Not Preferred but Acceptable	1461	0.037	-228.8
Bulls Never Purchased	1461	0.06	-182.31
Heifers Only	1461	0.048	-253.07
Heifers Equally Acceptable	1461	0.024	-228.71
Heifers Not Preferred but Acceptable	1461	0.064	-144.15
Heifers Never Purchased	1461	0.0255	-206.17
Horns Only	1461	0.093	-57.62
Horns Equally Acceptable	1461	0.019	-200.18
Horns Not Preferred but Acceptable	1461	0.029	-284.43
Horns Never Purchased	1461	0.037	-231.87
Precond Only	1461	0.069	-110.05
Precond Equally Acceptable	1461	0.033	-257.06
Precond Not Preferred but Acceptable	1461	0.076	-86.34
Precond Never Purchased	1461	0.018	-313.04



## **Conclusion**

This paper seeks to provide insight on the decision making involved in the Oklahoma stocker industry and the economic flexibility of the stocker industry. By analyzing a survey conducted in 2017 by NASS, some insight was achieved. The survey focused on stocker production and management practices, including the timing and duration of stocker production, health management, forage use, purchase and marketing of stocker cattle, the timing and distance of shipping, demographics, and biosecurity practices. Using the marginal effects of twenty logit models' specific production practices or decisions were pinpointed. Understanding which individuals use specific combinations of practices across the Oklahoma stocker industry will allow for more information to be available for agency planning and policy considerations.

The results presume that the likelihood of purchasing a steer will be increased if a producer has an income greater than \$60,000, animals are performing better than expected, animals will be on the operation less than 120 days, and there are no known sickness problems with Clostridia. The positive likelihood for heifers being purchased is when the producer's income is above \$60,000, there is below average forage, the animals are performing better than expected, and it is spring or summer grazing time.

Awareness of these preference bundles found from the survey are helpful for informing producers of other producers' decision-making habits. Research is conducted to share knowledge between interested parties. The stocker industry has yet to have much research done in these areas. Therefore, when looking at policy considerations, or for new producers wanting to learn the industry, there is little information provided. This research is intended to provide a steppingstone for future research and extension bulletins to be

completed on the decisions and economic flexibility of a stocker cattle producer. In an aim to improve the industry, and the profit margins of the producers open to research in the industry.

Further research for this analysis will involve different modeling techniques to better encapsulate who these stocker producers are and how they think. Specifically, a bivariate mimic analysis will be used. This will allow for a better understanding of the structure and relationships present in the model.

## CHAPTER IV

### SUMMARY AND FUTURE RESEARCH

Stocker producers are the intermediators between cow-calf producers and feedlot operators, and they employ a variety of management practices to achieve profitability in a dynamic market. The flexibility built into stocker production partially absorbs to the short-term variability in livestock and feed production. The total number of cattle that make up the United States cattle market as of January 1, 2022, was 91.9 million head, and of that, the feeder cattle supply was 25.5 million head. In Oklahoma, cattle have a total inventory value of 5.15 billion dollars. The economic motivation for stocker production is primarily to arbitrage and coordinate cattle industry production across sectors and over time, as well as, industry adjustments to feed and forage market conditions.

Little information exists on the decision making involved in the Oklahoma stocker industry and the economic flexibility of the stocker industry. Reference material is basically non-existent for the Oklahoma stocker cattle producers. There are few resources on management practices that provide the information to project profitability and market flexibility. Where there is monthly data for items like cattle on feed, stocker cattle numbers and production inventories are not measured directly in USDA data. Therefore, it is difficult to make market supply predictions for the feeder cattle market even though some conclusions can be drawn from weekly auction reports.

This research answers the question “Who is an Oklahoma stocker cattle producer?” It provides insight to the internal operation of the industry as a whole in an effort to support the increase in profitability. The first paper (discussed in chapter 2) is “The Oklahoma Stocker Industry” and its goal is to summarize the 2017 Oklahoma Beef Calf/Stocker Movement Survey to document stocker industry practices and flexibility. Stocker production is a margin business. Maximizing this net margin is achieved through least cost management practices. The second paper (discussed in chapter 3) is “Stocker Industry Production and Marketing Flexibility to Enhance Beef Industry Competitiveness.” The general objective of this paper is to examine the survey data to profile individuals participating in the Oklahoma stocker cattle industry.

The 2017 Oklahoma Beef Calf/Stocker Movement Survey was written by OSU extension and completed by NASS. It asked questions from seven distinct categories. These categories are operation characteristics, stocker purchases, health management, production practices and resource base, marketing, and demographics. The survey also encompasses a number of purchasing decisions of a stocker producer. This includes questions such as how many head purchased, how far are they willing to have cattle shipped, method of purchase, background of cattle purchased, and factors determining purchase.

A typical Oklahoma stocker cattle producer is above the age of 55 with a high school diploma. They raise cattle as their enjoyment source or for a supplemental income. Their median income is \$60,000-\$89,999 with 40% of that coming from their beef cattle enterprise. Although, their most common production activity is to sell weaned calves from a cow-calf operation, every one in five years producers end up doing some sort of

stocker activity, perhaps unknowingly. The most popular targeted weight gain for stocker producers is 300+ pounds on a 120-179-day ownership period. More than 400 pounds is the ideal weight gain, and less than 200 pounds is only sought after by 40% of producers. One hundred eighty to 240 days is the only other ownership period that is remotely acceptable to achieve said weight gain. In stocker production, a steer who gains more than 300 pounds in 120-179 days is preferred by a majority of producers.

When it comes to producer's flexibility, they are evenly weighted in "indifference" except for the animal type. This correlates to the important purchasing factors lined out in Figure 11. The indifference noted in this graph explains how a stocker producer will take that which they think will turn a profit given their management parameters. Therefore, when a stocker producer is truly playing a margins game then Figure 11 describes them perfectly.

Ultimately stocker producers practice flexibility in order to achieve the highest profit margins. As shown in Figure 13, market conditions affect producers the most. Also shown in the graphics, producers are willing to purchase and market a variety of animals with the exceptions of trader cattle and horned cattle. The amount of indifference noted by the figures in this section is remarkable and is connected to Chapter 3 of this thesis.

In Chapter 3, a separate logistic model was developed for each cattle type and purchasing preference for the cattle type. The combination of cattle type and purchasing preference led to a total of 20 different logistic models and marginal values for the production practices. By exploring significant trends in the data, the following hypothesis has been tested: a given combination of production practices identified in the survey will lead to the likelihood of purchase for a given group of cattle. The results from the logit

margins provided fewer significant production practices than expected. This shows, due to such low amount of significant practices, how much stocker producers are flexible in their production choices, and how difficult the specifics are to pin down in this industry. The results presume that the likelihood of purchasing a steer will be increased if a producer has an income greater than \$60,000, animals are performing better than expected, animals are on the operation less than 120 days, and there are no known sickness problems with Clostridia. The positive likelihood for heifers being purchased is when the producer's income is above \$60,000, there is below average forage, animals are performing better than expected, and it is spring or summer grazing time.

This research is intended to provide a starting point for future research and extension bulletins to be completed on the decisions and economic flexibility of a stocker cattle producer. More research is opened to the industry in an aim to improve the industry, and the profit margins of the producers. From this point, more conclusions can be drawn, and information can be compiled to start fixing this lack of data issue that exists in the stocker cattle industry.

Further research for this analysis will involve different modeling techniques to better encapsulate who these stocker producers are and how they think. Specifically, a bivariate mimic analysis could be used. This will allow for a better understanding of the structure and relationships present in the model. Secondly, a series of extension bulletins can be produced in a way that segments this research into digestible chunks for producers to comprehend. This survey consisted of 6 sections with several data points, where in this paper the big picture overview was given. In the future this survey could be cross examined with bivariate or trivariate analysis. Lastly, this research would improve from

several more years of this survey. This would allow for research on the changes over time that the stocker industry experiences. The Oklahoma stocker industry still has a long way to go before there is a plethora of comprehensive data, but this thesis provides a starting point for Oklahoma producers.

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## APPENDICES

**TABLE 1: Steer Margins**

<b>Steers Only</b>						
	Delta-method					
	Marginal	Std. Err.	z	P>z	[95% Conf.	Interval]
AgeGreat54	-0.007	0.013	0.550	0.581	-0.033	0.018
EduBach	-0.015	0.012	1.250	0.212	-0.039	0.009
IncG60k	0.032	0.014	2.340	0.019	0.005	0.059
G200lb	-0.045	0.024	1.870	0.061	-0.092	0.002
G120days	0.036	0.024	1.460	0.143	-0.012	0.083
SpringSum	-0.041	0.029	1.400	0.162	-0.098	0.016
MktCond	-0.037	0.026	1.420	0.157	-0.089	0.014
AboveAVGforage	0.005	0.031	0.150	0.877	-0.056	0.065
BetterAnimalPerf	0.048	0.029	1.640	0.100	-0.009	0.106
FeedAvail	0.020	0.036	0.560	0.576	-0.050	0.090
BRDsick	0.012	0.016	0.700	0.482	-0.021	0.044
Clostosick	-0.014	0.020	0.680	0.494	-0.053	0.026
Coccisick	0.017	0.023	0.720	0.470	-0.029	0.063
Bloat	-0.028	0.028	0.990	0.321	-0.083	0.027
Pinkeye	0.014	0.015	0.930	0.354	-0.016	0.044
<b>Steers Equally Acceptable</b>						
AgeGreat54	0.013	0.013	0.980	0.328	-0.013	0.038
EduBach	0.007	0.010	0.700	0.481	-0.013	0.027
IncG60k	0.009	0.011	0.810	0.418	-0.013	0.031
G200lb	0.021	0.019	1.100	0.270	-0.016	0.057
G120days	-0.060	0.022	2.770	0.006	-0.102	-0.017
SpringSum	-0.066	0.035	1.900	0.058	-0.134	0.002
MktCond	0.000	0.024	0.020	0.984	-0.047	0.048
AboveAVGforage	0.011	0.021	0.530	0.594	-0.030	0.052
BetterAnimalPerf	-0.031	0.036	0.860	0.391	-0.101	0.039
FeedAvail	0.035	0.021	1.700	0.090	-0.005	0.076
BRDsick	0.027	0.016	1.760	0.078	-0.003	0.058
Clostosick	-0.007	0.018	0.410	0.684	-0.043	0.028
Coccisick	-0.037	0.028	1.310	0.191	-0.091	0.018
Bloat	-0.002	0.026	0.080	0.939	-0.053	0.049
Pinkeye	-0.018	0.016	1.140	0.253	-0.048	0.013
<b>Steers Not Preferred but Acceptable</b>						
AgeGreat54	-0.005	0.007	0.640	0.525	-0.018	0.009
EduBach	-0.009	0.007	1.320	0.185	-0.022	0.004
IncG60k	0.006	0.007	0.860	0.392	-0.008	0.021
G200lb	-0.023	0.012	1.900	0.058	-0.047	0.001
G120days	0.026	0.013	2.000	0.045	0.001	0.051
SpringSum	0.001	0.012	0.070	0.942	-0.022	0.023

MktCond	0.001	0.012	0.120	0.902	-0.022	0.025
AboveAVGforage	-0.007	0.009	0.830	0.404	-0.025	0.010
BetterAnimalPerf	-0.010	0.010	1.010	0.313	-0.030	0.010
FeedAvail	-0.002	0.010	0.220	0.829	-0.022	0.018
BRDsick	0.008	0.008	0.960	0.335	-0.008	0.023
Clostsick	0.006	0.011	0.570	0.568	-0.015	0.027
Coccisick	0.016	0.010	1.580	0.115	-0.004	0.035
Bloat	0.000	(omitted)				
Pinkeye	-0.019	0.011	1.770	0.076	-0.041	0.002
<b>Steers Never Purchased</b>						
AgeGreat54	-0.013	0.009	1.350	0.177	-0.031	0.006
EduBach	-0.007	0.009	0.800	0.426	-0.024	0.010
IncG60k	0.000	0.009	0.040	0.971	-0.017	0.018
G200lb	0.013	0.016	0.810	0.418	-0.018	0.044
G120days	-0.008	0.016	0.540	0.592	-0.040	0.023
SpringSum	-0.006	0.016	0.400	0.692	-0.038	0.025
MktCond	0.014	0.017	0.790	0.428	-0.020	0.047
AboveAVGforage	-0.025	0.019	1.320	0.186	-0.063	0.012
BetterAnimalPerf	0.021	0.021	0.990	0.322	-0.020	0.061
FeedAvail	0.027	0.017	1.570	0.116	-0.007	0.060
BRDsick	-0.009	0.012	0.800	0.422	-0.033	0.014
Clostsick	0.020	0.011	1.730	0.083	-0.003	0.042
Coccisick	-0.017	0.015	1.170	0.243	-0.046	0.012
Bloat	0.016	0.014	1.120	0.263	-0.012	0.044
Pinkeye	0.012	0.010	1.210	0.225	-0.007	0.031

**TABLE 2: Bull Margins**

<b>Bulls Only</b>							
	Delta-method						
	Marginal	Std. Err.	z	P>z	[95% Conf.	Interval]	
AgeGreat54	0.004		0.009	0.460	0.647	-0.013	0.022
EduBach	0.000		0.007	0.060	0.951	-0.013	0.014
IncG60k	0.015		0.009	1.650	0.099	-0.003	0.032
G200lb	0.013		0.013	1.030	0.303	-0.012	0.039
G120days	-0.024		0.014	1.700	0.089	-0.052	0.004
SpringSum	-0.003		0.018	0.180	0.860	-0.038	0.032
MktCond	-0.035		0.021	1.650	0.099	-0.077	0.007
AboveAVGforage	-0.011		0.022	0.490	0.626	-0.055	0.033
BetterAnimalPerf	0.036		0.024	1.510	0.132	-0.011	0.082
FeedAvail	-0.014		0.020	0.710	0.478	-0.054	0.025
BRDsick	0.023		0.011	2.020	0.043	0.001	0.045
Clostisick	-0.023		0.016	1.420	0.157	-0.054	0.009
Coccisick	0.001		0.015	0.040	0.964	-0.028	0.030
Bloat	-0.004		0.016	0.250	0.805	-0.036	0.028
Pinkeye	-0.007		0.011	0.610	0.543	-0.029	0.015
<b>Bulls Equally Acceptable</b>							
AgeGreat54	-0.021		0.012	1.700	0.089	-0.044	0.003
EduBach	0.000		0.011	0.020	0.985	-0.022	0.022
IncG60k	0.013		0.012	1.060	0.289	-0.011	0.037
G200lb	0.004		0.020	0.220	0.825	-0.035	0.044
G120days	-0.001		0.021	0.020	0.980	-0.043	0.042
SpringSum	-0.058		0.034	1.690	0.090	-0.125	0.009
MktCond	-0.004		0.024	0.170	0.865	-0.052	0.044
AboveAVGforage	0.010		0.030	0.320	0.748	-0.049	0.069
BetterAnimalPerf	-0.036		0.033	1.080	0.280	-0.101	0.029
FeedAvail	0.032		0.026	1.240	0.216	-0.019	0.083
BRDsick	-0.012		0.018	0.680	0.498	-0.048	0.023
Clostisick	0.019		0.019	0.980	0.326	-0.019	0.057
Coccisick	-0.046		0.031	1.480	0.139	-0.106	0.015
Bloat	0.003		0.026	0.130	0.897	-0.047	0.053
Pinkeye	-0.006		0.014	0.410	0.685	-0.034	0.022
<b>Bulls Not Preferred but Acceptable</b>							
AgeGreat54	0.000		0.012	0.040	0.971	-0.022	0.023
EduBach	0.005		0.010	0.460	0.648	-0.015	0.024
IncG60k	0.013		0.011	1.130	0.257	-0.009	0.034
G200lb	-0.053		0.025	2.110	0.035	-0.102	-0.004
G120days	0.020		0.023	0.880	0.376	-0.025	0.066
SpringSum	-0.004		0.022	0.180	0.854	-0.047	0.039

MktCond	-0.007	0.023	0.290	0.775	-0.052	0.039
AboveAVGforage	-0.030	0.026	1.120	0.262	-0.082	0.022
BetterAnimalPerf	0.027	0.020	1.310	0.189	-0.013	0.066
FeedAvail	0.033	0.031	1.060	0.289	-0.028	0.093
BRDsick	0.019	0.014	1.350	0.177	-0.009	0.046
Clostsick	0.011	0.014	0.770	0.441	-0.017	0.039
Coccisick	0.009	0.018	0.490	0.625	-0.027	0.045
Bloat	-0.032	0.027	1.190	0.235	-0.084	0.021
Pinkeye	-0.004	0.014	0.310	0.754	-0.031	0.023
<b>Bulls Never Purchased</b>						
AgeGreat54	-0.001	0.010	0.090	0.930	-0.021	0.019
EduBach	-0.026	0.010	2.600	0.009	-0.045	-0.006
IncG60k	0.015	0.010	1.520	0.128	-0.004	0.033
G200lb	0.020	0.013	1.500	0.133	-0.006	0.046
G120days	-0.017	0.014	1.200	0.231	-0.045	0.011
SpringSum	-0.005	0.015	0.350	0.729	-0.034	0.024
MktCond	0.001	0.018	0.060	0.953	-0.033	0.036
AboveAVGforage	-0.026	0.021	1.260	0.206	-0.067	0.015
BetterAnimalPerf	0.032	0.021	1.540	0.123	-0.009	0.073
FeedAvail	0.023	0.017	1.380	0.168	-0.010	0.056
BRDsick	-0.003	0.011	0.260	0.793	-0.024	0.018
Clostsick	0.006	0.012	0.470	0.638	-0.018	0.029
Coccisick	-0.007	0.015	0.510	0.611	-0.036	0.021
Bloat	0.010	0.016	0.620	0.537	-0.021	0.041
Pinkeye	0.017	0.010	1.630	0.102	-0.003	0.037

**TABLE 3: Heifer Margins**

<b>Heifers Only</b>							
	Delta-method						
	Marginal	Std. Err.	z	P>z	[95% Conf.	Interval]	
AgeGreat54	-0.010		0.012	0.860	0.390	-0.033	0.013
EduBach	-0.012		0.011	1.140	0.253	-0.034	0.009
IncG60k	0.035		0.013	2.750	0.006	0.010	0.060
G200lb	-0.007		0.022	0.320	0.750	-0.049	0.035
G120days	0.006		0.022	0.280	0.779	-0.037	0.049
SpringSum	-0.004		0.020	0.220	0.828	-0.044	0.035
MktCond	0.008		0.021	0.360	0.721	-0.034	0.049
AboveAVGforage	-0.062		0.028	2.240	0.025	-0.116	-0.008
BetterAnimalPerf	0.039		0.024	1.630	0.103	-0.008	0.086
FeedAvail	0.042		0.028	1.510	0.131	-0.012	0.096
BRDsick	0.022		0.015	1.500	0.135	-0.007	0.051
Clostosick	0.020		0.015	1.310	0.190	-0.010	0.050
Coccisick	-0.019		0.020	0.940	0.346	-0.058	0.020
Bloat	-0.002		0.023	0.080	0.934	-0.046	0.042
Pinkeye	-0.009		0.014	0.620	0.537	-0.036	0.019
<b>Heifers Equally Acceptable</b>							
AgeGreat54	-0.003		0.011	0.250	0.800	-0.025	0.019
EduBach	-0.011		0.010	1.120	0.263	-0.030	0.008
IncG60k	-0.001		0.010	0.130	0.900	-0.022	0.019
G200lb	-0.008		0.019	0.450	0.651	-0.045	0.028
G120days	-0.011		0.019	0.560	0.579	-0.048	0.027
SpringSum	-0.042		0.024	1.770	0.077	-0.088	0.005
MktCond	0.021		0.020	1.030	0.301	-0.019	0.061
AboveAVGforage	-0.032		0.024	1.330	0.184	-0.079	0.015
BetterAnimalPerf	0.013		0.027	0.500	0.618	-0.039	0.066
FeedAvail	0.046		0.021	2.180	0.029	0.005	0.087
BRDsick	0.007		0.016	0.420	0.672	-0.024	0.037
Clostosick	0.003		0.016	0.200	0.845	-0.028	0.034
Coccisick	-0.008		0.023	0.370	0.714	-0.053	0.036
Bloat	0.023		0.022	1.030	0.303	-0.020	0.066
Pinkeye	-0.020		0.015	1.340	0.181	-0.050	0.009
<b>Heifers Not Preferred but Acceptable</b>							
AgeGreat54	-0.001		0.009	0.170	0.864	-0.018	0.015
EduBach	-0.004		0.008	0.480	0.630	-0.018	0.011
IncG60k	0.024		0.010	2.320	0.021	0.004	0.044
G200lb	0.009		0.015	0.640	0.522	-0.019	0.038
G120days	-0.018		0.018	0.990	0.324	-0.053	0.017
SpringSum	0.009		0.015	0.610	0.540	-0.020	0.038

MktCond	0.004	0.015	0.270	0.789	-0.026	0.034
AboveAVGforage	0.008	0.014	0.600	0.550	-0.019	0.036
BetterAnimalPerf	-0.031	0.019	1.640	0.100	-0.067	0.006
FeedAvail	0.001	0.014	0.080	0.933	-0.026	0.028
BRDsick	-0.006	0.010	0.620	0.538	-0.025	0.013
Clostsick	0.017	0.010	1.780	0.074	-0.002	0.036
Coccisick	-0.005	0.013	0.360	0.717	-0.031	0.021
Bloat	-0.011	0.014	0.780	0.435	-0.039	0.017
Pinkeye	0.019	0.009	2.260	0.024	0.003	0.036
<b>Heifers Never Purchased</b>						
AgeGreat54	-0.009	0.012	0.790	0.431	-0.033	0.014
EduBach	0.009	0.011	0.900	0.369	-0.011	0.030
IncG60k	-0.002	0.011	0.150	0.884	-0.023	0.020
G200lb	0.006	0.021	0.280	0.777	-0.036	0.048
G120days	-0.020	0.021	0.980	0.326	-0.061	0.020
SpringSum	-0.057	0.032	1.770	0.077	-0.121	0.006
MktCond	0					
AboveAVGforage	0.032	0.025	1.280	0.200	-0.017	0.081
BetterAnimalPerf	0.034	0.035	0.960	0.338	-0.035	0.102
FeedAvail	0.048	0.030	1.580	0.113	-0.011	0.106
BRDsick	-0.018	0.016	1.110	0.265	-0.050	0.014
Clostsick	-0.003	0.020	0.170	0.861	-0.042	0.035
Coccisick	0.006	0.022	0.280	0.783	-0.038	0.050
Bloat	-0.007	0.025	0.290	0.773	-0.057	0.042
Pinkeye	0.006	0.014	0.460	0.642	-0.020	0.033



**TABLE 4: Horned Cattle Margins**

<b>Horns Only</b>							
	Delta-method						
	Marginal	Std. Err.	z	P>z	[95% Conf.	Interval]	
AgeGreat54	-0.006	0.005	1.230	0.218	-0.015	0.003	
EduBach	-0.003	0.005	0.630	0.527	-0.013	0.007	
IncG60k	0.006	0.006	1.100	0.270	-0.005	0.018	
G200lb	0.008	0.010	0.780	0.436	-0.012	0.028	
G120days	-0.003	0.010	0.320	0.747	-0.022	0.016	
SpringSum	0	(omitted)					
MktCond	-0.007	0.006	1.170	0.244	-0.020	0.005	
AboveAVGforage	-0.001	0.006	0.110	0.910	-0.013	0.012	
BetterAnimalPerf	-0.004	0.010	0.410	0.685	-0.025	0.016	
FeedAvail	0.019	0.009	2.090	0.036	0.001	0.036	
BRDsick	0.003	0.006	0.630	0.528	-0.007	0.014	
Clostsick	0.006	0.007	0.880	0.377	-0.007	0.020	
Coccisick	0.000	0.007	0.010	0.992	-0.015	0.015	
Bloat	-0.004	0.009	0.450	0.653	-0.022	0.014	
Pinkeye	0.005	0.006	0.920	0.359	-0.006	0.016	
<b>Horns Equally Acceptable</b>							
AgeGreat54	0.004	0.012	0.330	0.743	-0.019	0.027	
EduBach	-0.006	0.010	0.610	0.542	-0.026	0.014	
IncG60k	0.007	0.011	0.670	0.500	-0.014	0.028	
G200lb	-0.012	0.024	0.490	0.624	-0.058	0.035	
G120days	0.000	0.025	0.020	0.987	-0.048	0.049	
SpringSum	-0.034	0.028	1.210	0.224	-0.089	0.021	
MktCond	-0.017	0.025	0.680	0.498	-0.066	0.032	
AboveAVGforage	-0.016	0.033	0.490	0.622	-0.081	0.049	
BetterAnimalPerf	0.026	0.028	0.950	0.342	-0.028	0.080	
FeedAvail	-0.015	0.033	0.470	0.639	-0.079	0.049	
BRDsick	-0.005	0.015	0.340	0.732	-0.033	0.023	
Clostsick	0.002	0.016	0.100	0.917	-0.029	0.032	
Coccisick	-0.010	0.023	0.420	0.677	-0.054	0.035	
Bloat	0.000	(omitted)					
Pinkeye	0.007	0.013	0.570	0.567	-0.018	0.033	
<b>Horns Not Preferred but Acceptable</b>							
AgeGreat54	-0.007	0.013	0.570	0.570	-0.033	0.018	
EduBach	-0.006	0.011	0.520	0.606	-0.028	0.017	
IncG60k	0.012	0.012	0.960	0.336	-0.012	0.036	
G200lb	0.015	0.022	0.660	0.507	-0.029	0.059	
G120days	-0.028	0.025	1.120	0.262	-0.077	0.021	
SpringSum	-0.048	0.034	1.430	0.153	-0.114	0.018	

MktCond	-0.006	0.025	0.230	0.821	-0.055	0.043
AboveAVGforage	-0.058	0.026	2.240	0.025	-0.108	-0.007
BetterAnimalPerf	0.059	0.030	1.930	0.054	-0.001	0.118
FeedAvail	0.010	0.030	0.330	0.745	-0.048	0.068
BRDsick	0.007	0.017	0.420	0.672	-0.026	0.040
Clostsick	0.019	0.018	1.070	0.284	-0.016	0.055
Coccisick	-0.026	0.026	1.000	0.320	-0.077	0.025
Bloat	0.043	0.023	1.890	0.059	-0.002	0.087
Pinkeye	-0.022	0.016	1.350	0.176	-0.054	0.010
<b>Horns Never Purchased</b>						
AgeGreat54	-0.009	0.011	0.830	0.408	-0.031	0.013
EduBach	-0.002	0.010	0.210	0.835	-0.022	0.018
IncG60k	0.018	0.011	1.570	0.117	-0.004	0.039
G200lb	-0.026	0.019	1.350	0.178	-0.064	0.012
G120days	0.005	0.019	0.240	0.808	-0.032	0.041
SpringSum	-0.002	0.020	0.110	0.914	-0.040	0.036
MktCond	0.004	0.023	0.160	0.871	-0.041	0.048
AboveAVGforage	-0.020	0.024	0.830	0.408	-0.068	0.028
BetterAnimalPerf	0.012	0.024	0.470	0.635	-0.036	0.059
FeedAvail	0.058	0.023	2.580	0.010	0.014	0.102
BRDsick	0.002	0.014	0.110	0.911	-0.026	0.029
Clostsick	0.010	0.016	0.620	0.536	-0.021	0.041
Coccisick	-0.005	0.018	0.290	0.771	-0.041	0.030
Bloat	-0.022	0.023	0.920	0.358	-0.068	0.024
Pinkeye	0.018	0.013	1.390	0.165	-0.007	0.043

**TABLE 5: Preconditioned Cattle Margins**

<b>Precond Only</b>							
	Delta-method						
	Marginal	Std. Err.	z	P>z	[95% Conf.	Interval]	
AgeGreat54	0.0086241	0.0080623	1.07	0.285	0.0071777	0.0244259	
EduBach	0.0024588	0.0062339	-0.39	0.693	-0.014677	0.0097595	
IncG60k	0.0180656	0.0084862	2.13	0.033	0.001433	0.0346983	
G200lb	0.0185902	0.0134914	-1.38	0.168	0.0450328	0.0078523	
G120days	0.0156205	0.0133169	1.17	0.241	0.0104802	0.0417212	
SpringSum	0.0311797	0.015161	-2.06	0.04	0.0608948	0.0014646	
MktCond	0.0002404	0.0132705	-0.02	0.986	-0.02625	0.0257693	
AboveAVGforage	0.0098475	0.0178882	-0.55	0.582	0.0449078	0.0252127	
BetterAnimalPerf	0.016048	0.0131589	1.22	0.223	-0.009743	0.0418391	
FeedAvail	0.0215225	0.016608	1.3	0.195	0.0110286	0.0540737	
BRDsick	0.0098393	0.0082813	1.19	0.235	0.0063918	0.0260704	
Clostsick	0.0089535	0.0123863	-0.72	0.47	0.0332303	0.0153233	
Coccisick	0.0078865	0.0127344	0.62	0.536	0.0170724	0.0328454	
Bloat	0.0067355	0.0150719	0.45	0.655	0.0228049	0.0362759	
Pinkeye	0.0076529	0.0086624	-0.88	0.377	0.0246309	0.009325	
<b>Precond Equally Acceptable</b>							
AgeGreat54	0.0106254	0.0121399	-0.88	0.381	0.0344191	0.0131683	
EduBach	0.0063492	0.0106925	0.59	0.553	0.0146077	0.0273061	
IncG60k	0.0057867	0.0115572	0.5	0.617	-0.016865	0.0284384	
G200lb	0.0136427	0.0212899	-0.64	0.522	0.0553701	0.0280847	
G120days	0.0272034	0.0245347	-1.11	0.268	0.0752906	0.0208837	
SpringSum	0.0500512	0.0336851	-1.49	0.137	0.1160728	0.0159705	
MktCond	0.0246262	0.0225214	1.09	0.274	0.0195149	0.0687674	
AboveAVGforage	0.0231414	0.0206957	-1.12	0.263	0.0637043	0.0174214	
BetterAnimalPerf	0.0002758	0.0292534	-0.01	0.992	0.0576114	0.0570597	
FeedAvail	0.0407516	0.0242765	1.68	0.093	0.0068293	0.0883326	
BRDsick	0.0117857	0.0145615	0.81	0.418	0.0167542	0.0403256	
Clostsick	0.013225	0.0165752	0.8	0.425	0.0192617	0.0457118	
Coccisick	0.0103998	0.0202826	0.51	0.608	0.0293535	0.050153	
Bloat	0.0689193	0.0339471	-2.03	0.042	0.1354543	0.0023842	
Pinkeye	0.0001779	0.0141802	0.01	0.99	0.0276148	0.0279706	
<b>Precond Not Preferred but Acceptable</b>							
AgeGreat54	0.0023958	0.0080677	0.3	0.766	0.0134165	0.0182082	
EduBach	0.0049372	0.0069384	-0.71	0.477	0.0185363	0.0086618	
IncG60k	0.0195063	0.0095965	2.03	0.042	0.0006974	0.0383151	
G200lb	0.0135707	0.0121165	1.12	0.263	0.0101773	0.0373186	
G120days	0.0042386	0.0125305	-0.34	0.735	-0.028798	0.0203208	
SpringSum	0.0089294	0.0120177	-0.74	0.457	0.0324835	0.0146248	

MktCond	0.0119934	0.0183104	-0.66	0.512	0.0478811	0.0238943
AboveAVGforage	0 (omitted)					
BetterAnimalPerf	0.0201156	0.0185289	1.09	0.278	0.0162003	0.0564316
FeedAvail	0 (omitted)					
BRDsick	0.0151831	0.0098523	1.54	0.123	0.0041271	0.0344932
Clostsick	0.0057043	0.0111724	0.51	0.61	0.0161933	0.0276018
Coccisick	0 (omitted)					
Bloat	0.0166227	0.0153842	1.08	0.28	0.0135297	0.0467752
Pinkeye	0.0212224	0.0112967	-1.88	0.06	0.0433635	0.0009186
<b>Precond Never Purchased</b>						
AgeGreat54	-0.016	0.013	1.230	0.218	-0.043	0.010
EduBach	-0.019	0.012	1.510	0.130	-0.043	0.006
IncG60k	0.011	0.013	0.860	0.388	-0.014	0.037
G200lb	0.011	0.023	0.450	0.650	-0.035	0.056
G120days	-0.016	0.023	0.690	0.489	-0.060	0.029
SpringSum	-0.026	0.026	0.990	0.320	-0.078	0.025
MktCond	-0.017	0.028	0.620	0.536	-0.071	0.037
AboveAVGforage	-0.023	0.032	0.710	0.480	-0.086	0.040
BetterAnimalPerf	0.036	0.032	1.130	0.259	-0.026	0.098
FeedAvail	0.049	0.028	1.770	0.077	-0.005	0.103
BRDsick	-0.008	0.018	0.430	0.664	-0.042	0.027
Clostsick	0.008	0.020	0.400	0.692	-0.031	0.046
Coccisick	-0.011	0.025	0.460	0.643	-0.059	0.037
Bloat	0.011	0.024	0.470	0.640	-0.036	0.059
Pinkeye	0.011	0.016	0.680	0.496	-0.020	0.042

## 2017 Oklahoma Beef Calf/Stocker Movement Survey

Conducted by Oklahoma State University Department of Agricultural Economics in cooperation with USDA



Participation is **voluntary** and your responses are **confidential**. Our results will include no individually identifiable information. Only summary data will be published. You are not expected to provide exact numbers from your operation's records. Your best estimates are acceptable.

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We appreciate your willingness to participate! Please return your completed questionnaire in the postage paid envelope provided.

### Section 1. Cattle Operation Characteristics

**Q1.1** Do you own cows and produce calves or purchase cattle for stocker or feedlot production? If either or both apply, please check yes.

Yes (continue)     No (Skip to back page, Section 6)

**Q1.2** On January 1, 2017, how many of each of the following beef animals were in this operation?

\_\_\_\_\_ Beef Cows + \_\_\_\_\_ Calves + \_\_\_\_\_ Replacement Heifers + \_\_\_\_\_ Other Cattle + \_\_\_\_\_ Bulls = \_\_\_\_\_ Total Cattle

**Q1.3** In which region of the state is your cattle operation? (Defined by Interstates 40 and 35)

Northwest     Northeast     Southwest     Southeast

**Q1.4** Does your operation maintain cattle on land in multiple counties?     Yes     No

**Q1.5** Does your operation maintain cattle on land in states that border Oklahoma?

No     Yes - If Yes, which states (check all that apply)  
 Colorado     New Mexico     Texas     Arkansas     Missouri     Kansas

Q1.6. Regarding frequency of retention and marketing what has been typical of your cattle operation for the past 5 years. (Jan. 1, 2012- Dec. 31, 2016.)	Always	Frequently	Sometimes	Rarely	Never
	<i>Please check only one per row.</i>				
Sell steers/bulls at weaning or immediately after preconditioning?					
Sell heifers at weaning or immediately after preconditioning?					
Retain calves for grazing beyond a preconditioning period for later sale as feeder cattle?					
Retain calves through the feedlot?					
Retain heifers for replacements <i>primarily</i> for own use (selling only culled heifers)?					
Retain heifers as replacements for own use with the intent to sell <i>some</i> replacement heifers?					
Retain heifers as replacements with the intent to sell as open/bred replacements?					

Q1.7. Which of the following production activities have occurred in your operation: (Please check ALL that apply.)	At least once in the Past 5 years	Routinely	Q1.8. Which ONE production activity in Question Q1.7 would you say BEST DESCRIBES your operation? Please write ONLY ONE letter (A through J) in the box below.  <div style="border: 1px solid black; width: 80px; height: 20px; margin: 0 auto;"></div>
A. Cow/Calf, Retain calves through feedlot	<input type="checkbox"/>	<input type="checkbox"/>	
B. Cow/Calf and Stocker/Backgrounding calves	<input type="checkbox"/>	<input type="checkbox"/>	
C. Cow/Calf, Sell calves at weaning	<input type="checkbox"/>	<input type="checkbox"/>	
D. Stocker/Backgrounder, Retain calves through feedlot	<input type="checkbox"/>	<input type="checkbox"/>	
E. Stocker/Backgrounder	<input type="checkbox"/>	<input type="checkbox"/>	
F. Custom feeder	<input type="checkbox"/>	<input type="checkbox"/>	
G. Purebred seedstock	<input type="checkbox"/>	<input type="checkbox"/>	
H. Youth Show Animals	<input type="checkbox"/>	<input type="checkbox"/>	
I. Freezer Beef	<input type="checkbox"/>	<input type="checkbox"/>	
J. Other _____	<input type="checkbox"/>	<input type="checkbox"/>	

Q1.9. Please rank (1- highest, 4 – lowest) the motivations for production decisions that are applicable to your operation:					
Motivations →	Does Not Apply	It is preferred or a necessary part of my production system.	Utilize or balance forage/feed supplies	In response to or to take advantage of cattle market conditions	In response to or to take advantage of feed market conditions
	(√)				
Q1.9a. My decision to retain my own calves as stockers for sale as feeder cattle is most influenced by:					
Q1.9b. My decision to retain heifers as replacements for my own use is most influenced by:					
Q1.9c. My decision to retain heifers as replacements for later sale as open/bred heifers is most influenced by:					
Q1.9 d. My decision to purchase additional stockers to complement cow-calf production is most influenced by:					

Q1.10. From January 1, 2016 to December 31, 2016, which of the animals listed below were	Part of my farming/ranching operation	Not part of my operation, but seen within my operation	Fenceline proximity of my operation
Other beef cattle (Not your own)	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Other owned cattle maintained separately (e.g. Purebred or show cattle, dairy)	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Farmed Bison/Deer/Elk	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Sheep/Goats	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Domestic Swine	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Poultry	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Horses, Donkeys, Mules, etc.	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Feral Swine		<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
Wild deer/elk/antelope/Bison		<input type="checkbox"/> Yes	<input type="checkbox"/> Yes

Please continue to Section 2.

## Section 2. Stocker Purchases

**Q2.1. Did you purchase cattle for stocker or feedlot production in 2016?**  Yes (Continue)  No (Please go to Page 6, Section 3)

**Q2.2. What was the total number of head purchased and in-shipments for 2016? (See definitions below in Q2.4.)**

\_\_\_\_\_ Total Head Purchased      \_\_\_\_\_ Total In-Shipments

Q2.3. For the total purchases listed above, what percent of purchased cattle are typically in each weight category?						
	< 400 lbs	400-500 lbs	500-600 lbs	600-700 lbs	>700 lbs.	Total
Steers/Bulls (%)						100 %
Heifers (%)						100 %

**Q2.4. Please complete the table below based on your own purchases from January 1, 2016 through December 31, 2016.**

Please indicate for each origin for stocker purchases and each time period, the number of head purchased and the number of shipments. A shipment is a group of animals originating at one source on any given day.  
*Example: A semi-trailer load of 90 calves from an auction 100 miles away in July is one shipment. Two 5<sup>th</sup> wheel trailer loads totaling 35 calves purchased one week apart in October from an auction 25 miles away is two shipments. See bottom of page 12 for a sample entry based on this example.*

Purchase Source	Miles shipped	Jan-Mar		Apr-Jun		Jul-Sep		Oct-Dec	
		# of Head	# of Shipments	# of Head	# of Shipments	# of Head	# of Shipments	# of Head	# of Shipments
Did you purchase cattle from an Auction Facility? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those purchases.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								
Did you purchase cattle from an Order Buyer? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those purchases.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								
Did you purchase cattle Directly from a Producer? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those purchases.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								
Did you purchase cattle via Satellite, Video, or Internet? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those purchases.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								

Q2.5. In general, how likely are you to purchase the following, relative to the other categories of animals included in the table below.		Only or Mostly	Equally Acceptable	Not preferred but acceptable	Rarely or Never
Type of Animal	Example: Rodeo Cattle				X
(Please choose only one response for each row)					
	Steers				
	Uncastrated Males				
	Heifers				
	Animals with Horns				
	Certified Preconditioned Calves				

Q2.6. How often do you know the background/history of stocker cattle purchases regarding the following factors?	Always	Frequently	Sometimes	Rarely	Never
	<i>Please check only one per row.</i>				
Owner/Seller					
Reputation of Owner/Seller					
Weaned (at least 2 weeks)					
Vaccinated for Respiratory Diseases					
Vaccinated for Clostridial Diseases					
Previously Implanted					
Previously Dewormed					

RECEIVING	% of Calves					Will NOT Comingle
<i>Receiving or receiving programs refer to special management for newly arrived calves that may include quarantine from other animals; special feed; general health treatments; and sickness detection and treatment.</i>	Less than 7 days	7-14 days	15-21 days	22-28 days	More than 28 days	
Q2.7. What percent of purchased stockers are typically managed in receiving programs of the following duration?						X
	<b>Each row should equal 100%</b>					
Q2.8. What percent of newly received stockers that have completed receiving in your operation will be comingled with other animals in the following time periods?						

**Q2.9. Please indicate average, minimum and maximum number of stockers purchased for the 5 year time period 2012-2016:**

Average # of head purchased per year over the five years		Maximum # of head purchased in any year		Minimum # of head purchased in any year	
Steers/Bulls	Heifers	Steers/Bulls	Heifers	Steers/Bulls	Heifers



Q2.10. Indicate the importance of each factor in determining your stocker cattle purchases with an (X).  Then rank your top three most important factors in the right column.	Very Important	Important	Indifferent	Slightly Important	Not important	RANK only your 3 most important factors 1, 2 and 3
	Mark only one Reply per Row					
Specific breed/x-breed						
General animal type (frame/muscling)						
Animal size/weight						
Certified preconditioned cattle						
Purchasing animals from a specific geographic origin						
Avoiding animals from a specific geographic origin						
Distance shipped						
Avoiding "trader" cattle (stale or sold multiple times)						
Source/method of purchase (e.g. auction vs. direct)						

Q2.11. For each of the following, please rate your flexibility to adjust purchases when you are unable to purchase the animals you typically/preferably would purchase. (Circle one per row).					
	Not Flexible				Very Flexible
Distance Shipped	1	2	3	4	5
Geographic Origin	1	2	3	4	5
Source/Method of purchase	1	2	3	4	5
Animal Purchase Weight (lighter or heavier)	1	2	3	4	5
Timing of purchases (adjust by 1 month or more)	1	2	3	4	5
Animal Type (frame/muscling)	1	2	3	4	5
Number of animals purchased per year	1	2	3	4	5
Animal breed/x-breed	1	2	3	4	5

**Q2.12.** How often during production do your stocker cattle cross state lines moving between properties?  
 Always  Frequently  Sometimes  Rarely  Never

**Q2.13.** Between initial arrival and shipment for sale, how many times will stocker cattle groups typically be shipped between production locations (non-adjacent pastures)? Check one.  
 More than 4 times  4 times  3 times  2 times  1 time  Zero times (animals stay in the same location)

**Q2.14.** Indicate the frequency with which the following statements apply to your operation:

Purchased stockers are processed in the same facilities as owned cattle  
 Always  Frequently  Sometimes  Rarely  Never

Purchased stockers graze the same pastures as owned cattle but are not commingled (i.e. at different times)  
 Always  Frequently  Sometimes  Rarely  Never

Do you maintain a (quarantine) rest period between uses for pastures used both by purchased and raised animals?  
 Always  Frequently  Sometimes  Rarely  Never

Please continue to Section 3.

### Section 3. Health Management

**Q3.1.** Do you have an established Veterinary-Client Patient Relationship?  Yes  No  I don't know

**Q3.2.** How familiar are you with the requirements for the Veterinary Feed Directive that took effect in 2017? Please check ONLY one box.

<input type="checkbox"/>	I know what requirements apply to my operation and I am prepared to comply.
<input type="checkbox"/>	I know what requirements apply to my operation, but I am not sure what to do about it.
<input type="checkbox"/>	I have heard of the Veterinary Feed Directive, but I don't know what requirements it places on my operation.
<input type="checkbox"/>	I have not heard of the Veterinary Feed Directive.

**Q3.3.** How often do you use the following production management practices? (Check one per row)

TREATMENT	TYPE or TIMING	Always	Frequently	Sometimes	Rarely	Never
Growth Implant (hormones)	Steers					
	Heifers					
Ionophores (Rumensin, Bovatec)						
Castration						
Dehorn: (Check here if polled genetics are used instead: <input type="checkbox"/> )						
Animal Identification	Visible tag					
	Electronic ID					
	Brand					

**Q3.4.** How often do you use the following health management practices/treatments? (Check one per row)

Respiratory Vaccine	Killed					
	Modified Live					
Clostridial Vaccine						
Parasite control	External Parasites					
	Internal Parasites					
Fly Tags	Summer					
	Winter					
Deworming	Summer					
	Winter					
Metaphalaxis (mass treatment of all animals with antibiotics on arrival)						
Follow a specific program to detect sickness and treat cattle						
Treatment decision is based on:	Animal appearance and/or behavior					
	Temperature					

Q 3.5. Frequency and Rank of Disease Impact  Note: In Q3.5 and Q3.6, BRD refers to Bovine Respiratory Disease complex, also known as shipping fever or pneumonia. This includes several viral and bacterial organisms including IBR, PI3, BRSV, BVD, <i>Histophilus</i> , <i>Mannheimia</i> , <i>Mycoplasma</i> , and <i>Pasturella</i> .	a. Please indicate the frequency that each of the following diseases causes <b>sickness (morbidly)</b> and treatment in stocker cattle in your operation (check one per disease):					b. Please indicate the frequency that each of the following diseases causes <b>death loss (mortality)</b> in stocker cattle in your operation (check one per disease):					c. Please rank the top three diseases in order of potential negative economic impact on your operation. This includes cost to treat or prevent the disease, as well as lost productivity and death loss.		
	Frequently	Sometimes	Rarely	Never	Don't know	Frequently	Sometimes	Rarely	Never	Don't know	RANK 1, 2, and 3		
BRD													
Clostridial (Blackleg, Tetanus)													
Coccidiosis													
Bloat													
Pinkeye													
Other _____													

Q 3.6. Please rate the threat of introducing the following diseases into your operation due to the arrival of cattle from outside sources (check one per row):	Large Threat	Medium Threat	Low Threat	Not a Threat	Don't know
BRD (Bovine Respiratory Disease aka shipping fever or pneumonia)					
Clostridial (Blackleg, Tetanus)					
Coccidiosis					
Pinkeye					
Persistently infected BVD Cattle					
Tuberculosis (M. bovis)					
Brucellosis/bangs (B. abortus)					
Johne's Disease (M. avium)					
Foreign animal disease (e.g. Foot and Mouth Disease)					

Q3.7. For the five year period 2012- 2016, please indicate average, minimum and maximum annual percent of sickness/treatment and death loss:

	Average %	Maximum %	Minimum %
Sickness/Treatments			
Death Loss			

Please continue to Section 4.

**Section 4. Production Practices and Resource Base**

**Q4.1. How many times in 2016 did the following visit your operation? Did they have physical contact with your cattle?**

Type of Visitor	# of visits	# of visits with physical contact
Veterinarian or other animal health professional		
Nutritionist or Animal feed company representative		
Animal pharmaceutical company representative		
Livestock hauler		
Feed hauler		
Market representatives (videotaping or sale arrangements)		
Extension/academic specialists (not including tours)		
Customer (private individual viewing cattle for sale)		
Tours (school, industry or other)		
Other customers (agro-tourism, hunters, etc.)		
Other non-business visitors (producers, neighbors, etc.)		

**Q4.2. From January 1, 2016 to December 31, 2016, indicate for each type of cattle shipment, the percent of animals moved by livestock hauling equipment (e.g. trucks, trailers, etc.) of different ownership.**

	Owned Equipment	Borrowed Equipment	Hired Equipment	
Incoming Shipments (Purchaser)				= 100%
Check here if no purchases: <input type="checkbox"/>				
Shipments during production (Pasture Movement)				= 100%
Outgoing Shipments (Marketing)				= 100%

**Q4.3. If you have used any Borrowed/Shared Equipment in Q4.2, please answer the following questions about borrowed/sharing of equipment from January 1, 2016 to December 31, 2016.**

	Incoming Shipments (Purchases)	During Production (Movements between pastures, etc.)	Outgoing Shipments (Marketing)
How many times did you haul cattle using borrowed livestock hauling equipment (trucks, trailers, etc.) from other producers?			
How many times was borrowed hauling equipment disinfected prior to use?			
How many times did you lend your livestock hauling equipment to other producers?			
How many times was shared hauling equipment disinfected when returned?			
How many times did you borrow or lend other equipment (tractors, chutes, feed wagons, manure spreaders, etc.) to other producers?	X		X
How many times was borrowed or lent equipment disinfected when returned (tractors, chutes, feed wagons, manure spreaders, etc.)?	X		X

**Q4.4. During January 1, 2016 through December 31, 2016, what percent of stocker production occurred in the following locations?**

	%
Contiguous parcels forming the main or principal (Headquarters) land base used for cattle production	
Located locally (<10 miles) from Headquarters	
Located 10-30 miles from Headquarters	
Located 31-60 miles from Headquarters	
Located 61-150 miles from Headquarters	
Located more than 150 miles from Headquarters	
<b>TOTAL</b>	<b>100 %</b>

**Q4.5. For each of the following, please rate your flexibility to adjust stocker program characteristics (Circle one per row):**

	Not Flexible				Very Flexible
	1	2	3	4	5
Overall Stocker Program (type of grazing, season, etc.)					
Timing of Grazing Period					
Length of Grazing Period					
Animal Marketing Weight					
Animal Marketing Date					
Commingling Protocol					

**Q4.6. Describe the frequency that you used the following general stocker production systems for the five year time period from January 1, 2012 to December 31, 2016: (Check one per row)**

	Always	Frequently	Sometimes	Rarely	Never
Grazing only (including seasonal protein supplementation)					
Semi-Confinement (Grazing with energy and protein supplementation)					
Confinement (Dry lot) (complete ration provided)					
<b>Q4.7. Indicate the frequency that the following stocker production programs were used during the five year time period from January 1, 2012 to December 31, 2016: (Check one per row):</b>					
Year round or multi-seasonal grazing using flexible and variable combinations of forages and feeding programs					
Distinct stocker programs in multiple seasons (Example: wheat pasture in winter AND native range in summer)					
Fall/Winter grazing only using specific forages (Example: wheat)					
Spring/Summer grazing only using specific forages (Example: native range)					

**Q 4.8. Indicate the importance of each of the following forage sources used for stocker production. (Do not include hay acreage unless also grazed) Please check only one per row.**

	Predominant Forage Source	Major Forage Source	Minor Forage Source, but Important Seasonally	Minor Forage Source, used occasionally or intermittently	Rarely or Never Used Forage Source
Native Range					
Small grain pasture (wheat, barley, rye, or other cereals)					
Introduced cool season forage (Fescue, ryegrass, etc.)					
Introduced warm season forage (Bermuda, Old World Bluestem, etc.)					
Forage Sorghum (Sudan or Hay grazer, etc)					
Stockpiled dry forage					
Winter annuals (Brassicas, such as turnips, radishes, etc)					

	Always	Frequently	Sometimes	Rarely	Never
<b>Q 4.9. How often are the following weight gain categories the targeted level for stocker weight gain in your stocker program? (Please indicate typical expectations regardless of possible weather impacts)</b>					
< 50 pounds					
50-100 pounds					
100-200 pounds					
200-300 pounds					
300-400 pounds					
More than 400 pounds					
<b>Q 4.10. Indicate the frequency of stocker cattle ownership period for your operation. (Indicate typical expectations regardless of possible weather impacts.)</b>					
Less than 60 days					
60-119 days					
120-179 days					
180-240 days					
More than 240 days					
<b>Q 4.11. How frequently are your target sale weights or marketing dates for stockers significantly altered (+/- 50 lbs. or +/- 30 days) by each of the following scenarios?</b>					
During Spring/summer grazing					
During Fall/winter grazing					
Cattle market conditions (sell early or hold longer)					
Above average forage supplies					
Below average forage supplies					
Better than expected animal performance					
Worse than expected animal performance					
Availability of inexpensive hay or supplemental feeds					
Limited availability or expensive hay or supplemental feeds					

Please continue to Section 5.

### Section 5. Marketing

**Q5.1. What was the total number of head sold and out-shipments for 2016? (See definition of out-shipment in Q5.2)**

\_\_\_\_\_ Total Head Sold      \_\_\_\_\_ Total Out-Shipments

**Q5.2. Please complete the table below based on *your own sales* from *January through December 2016*:**

For each **marketing venue** for stockers sold, please indicate the **number of head sold** and the **number of out-shipments by time period**. An out-shipment is a group of animals originating from your operation and going to a single destination on any given day.  
*Example: A semi-trailer load of 90 calves sold at auction 100 miles away in July is one shipment. Two 5<sup>th</sup> wheel trailer loads totaling 35 calves sold one week apart in October at an auction 25 miles away is two shipments. See bottom of page 12 for a sample entry based on this example.*

Marketing Venue	Miles shipped	Jan-Mar		Apr-Jun		Jul-Sep		Oct-Dec	
		# of Head	# of Shipments	# of Head	# of Shipments	# of Head	# of Shipments	# of Head	# of Shipments
Did you sell stocker cattle at an Auction Facility? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those sales.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								
Did you sell stocker cattle to an Order Buyer? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those sales.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								
Did you sell stocker cattle Directly to an Individual Buyer? (Producer, Feedlot, etc.) <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those sales.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								
Did you sell stocker cattle via Satellite, Video, or Internet? <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes, complete the rows to the right for those sales.	< 10								
	11-30								
	31-60								
	61-150								
	151-300								
	301-600								
	601-1200								
	> 1200								

**Q5.3. Enter the estimated percentage of your stocker cattle marketed for the following categories in a typical year:**

a. Percentage of Stockers Marketed by Weight	500-600 lbs	600-700 lbs	700-800 lbs	800-900 lbs	900-1000 lbs	>1000 lbs	Total
Steers/Bulls (%)							100 %
Heifers (%)							100 %

b. Percentage of Stockers Marketed by Group Size	
Less than semi-truck load	%
Semi-truck loads (Approximately 50,000 lbs)	%
<b>TOTAL</b>	<b>100%</b>

c. Percentage of Stockers Sold: Interstate	
Destination of calves is across state lines	%

**Please continue to Section 6.**

### Section 6. Producer Characteristics

**Q6.1. Please select your age group:**  <25  25-34  35-44  45-54  55-64  65-74  >75

**Q6.2. Check the category that best describes the highest level of education that you have attained:**

High school Graduate  Vocational, Technical, or 2 year degree  Bachelor's Degree  Graduate or Professional Degree  None of these

**Q6.3. How many years have you been a primary decision maker in the cattle business?**

<5  5-10  10 - 20  >20

**Q6.4. Please rank (1, 2, and 3) your top motivations for raising or owning cattle?**

\_\_\_\_ Primary Source of Income  
 \_\_\_\_ Supplemental Income  
 \_\_\_\_ Lifestyle/Enjoyment  
 \_\_\_\_ Control Excess Forage/Land Management  
 \_\_\_\_ Tax Advantages  
 \_\_\_\_ Family Tradition/Obligation  
 \_\_\_\_ Other: \_\_\_\_\_

**Q6.5. Do you live on primary land base for your cattle operation?**

Yes  No

**Q6.6. Of the total acreage of land used for stocker production, what percent is:**

\_\_\_\_\_ Owned (%) + \_\_\_\_\_ Leased (%) = 100% Total

**Q6.7. Which of the following best describes the past year's household NET INCOME from all sources?**

Less than \$30,000  \$90,000 -119,999  
 \$30,000 - \$59,999  \$120,000 and above  
 \$ 60,000 - \$89,999

**Q6.8. Approximately what percentage of the past year's household net income came from your beef cattle operation?**

Zero percent  41 to 60 percent  
 1 to 20 percent  61 to 80 percent  
 21 to 40 percent  81 to 100 percent

**Q6.9. A. Have you completed Beef Quality Assurance (BQA) training?**  Yes  No  
**B. Have you completed (or currently enrolled in) OSU's Master Cattleman program?**  Yes  No

**We know your time is valuable. Thank you for completing the survey and helping us better serve you!**



**EXAMPLE for Tables 2.4 and 5.2**

Source	Miles shipped	Jan-Mar		Apr - Jun		Jul - Sep		Oct - Dec	
		# of Head	# of Shipments	# of Head	# of Shipments	# of Head	# of Shipments	# of Head	# of Shipments
Did you purchase cattle from an Auction Facility? X Yes <input type="checkbox"/> No	< 10								
	11-30							35	2
	31-60								
	61-150					00	1		
If yes, complete the rows to the right for those purchases	151-300								
	301-600								
	601-1200								
	> 1200								

Example



VITA

Michael Ethan McGill

Candidate for the Degree of

Master of Science

Thesis: THE OKLAHOMA STOCKER CATTLE INDUSTRY: STRUCTURE AND  
FUNCTION

Major Field: Agricultural Economics

Biographical:

Education:

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