

AN ASSESSMENT OF PRODUCTION PRACTICES AND
MARKETING PREFERENCES AMONG SHEEP
PRODUCERS IN OKLAHOMA

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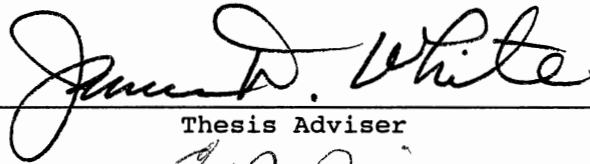
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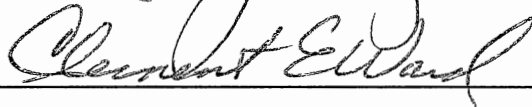
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CHAPTER I

INTRODUCTION

Inventory numbers for all sheep in the United States have declined 25 of the past 32 years. With exception of the years 1980-1982 and 1987-1990, inventory for all sheep in the United States had decreased from 33.2 million head in 1960 to 11.2 million head as reported January 1, 1991 (See Appendix B). Likewise, ewe lambs, lambs, and ewes (one year and older) paralleled this downward trend (See Appendix B). Information presented in Appendix B further indicates sheep numbers in the United States have gradually increased from 1987 to 1990.

According to the Oklahoma Crop and Livestock Reporting Service (OCLRS), sheep inventory numbers in Oklahoma diminished from 274 thousand head in 1960 to a low of 72 thousand head on January 1, 1977. Sheep numbers increased from 1978 to 1983, then decreased to 85 thousand head on January 1, 1985. Since 1985, sheep numbers have progressively increased, the exception occurring on January 1, 1990. This report revealed a 17 thousand head decrease from the previous year (See Appendix C). OCLRS data, Appendix D, indicated a decrease in numbers of lamb marketings from 188 thousand head in 1961 to a low of 32 thousand head in 1983. Steady, downward trends in lamb marketings was evident from 1962 to 1964. An immense plunge in lamb marketing occurred in 1965 followed by two years of improved

marketings. Lamb marketings again plummeted in 1968, rebounded slightly during 1969, and remained relatively stable through 1973. During 1974 lamb marketings decreased 25 thousand head and continued a downward trend through 1983. Lamb marketings regained momentum in 1984 and more lamb was marketed during 1989 than any year since 1973. However, during 1990 the number of lambs marketed decreased by 17 thousand head.

These 136 thousand head fewer lambs available for annual marketing from the 2,800 Oklahoma sheep farms illustrates the impact structural change within the marketing sector and the sheep industry has exerted on the Oklahoma sheep industry.

An inverse relationship has existed between price per hundred weight (Cwt) received and decline in lamb marketings (See Appendix E). Oklahoma sheep producers are confronted with the dilemma of marketing adequate numbers of consumer preferred lamb throughout the year. This inability to provide slaughter facilities a uniform flow of acceptable lamb had translated into less than top prices being offered Oklahoma producers.

As sheep numbers declined, so did the number of markets and slaughtering facilities. Markets began relocation to areas where sufficient sheep numbers were available. Slaughtering facilities began migrating to areas where sheep populations were adequate to consummate demand. Since most lambs consumed in the United States occurs on the east and west coasts, one can readily surmise the depletion of competitive markets confronting Oklahoma lamb producers.

Ercanbrack (14) indicated supply and demand was the prominent factor in price determination of lambs. Since most ewes lamb in the spring and lambs marketed during the fall, a seasonal oversupply often creates a seasonal low during September and October. Occasionally, the seasonal supply and price curve changes. Occurrences such as drought or blizzard may alter the quantities of lamb availability and "out-of-season" highs or lows may influence price.

According to Ercanbrack (14), short term price fluctuations may result from lambs not moving throughout marketing channels. Packers may own an abundance of lambs during a period when retailers experience difficulty in merchandising adequate quantities to relieve the oversupply. Consequently, slaughter demand for lambs will reduce and eventually be reflected at the wholesale level where producers receive lower than anticipated prices. Consumers may be unable or unwilling to purchase lambs as a result of economic circumstances or unusual weather conditions which alter lamb consumption. Likewise, short-term increases may exist whenever a short-term shortage of lambs occur and demand remains constant.

As one might conjecture, the demise of market competition, repositioning of lamb markets and slaughter facilities, amalgamated with pricing pressures associated with seasonal supply and demand fluctuations can evoke disruption within lamb marketing in Oklahoma. Nevertheless, the sheep industry has remained an integral enterprise within Oklahoma agriculture. For a devote sector of producers, the sheep enterprise has become the selected alternative

enterprise complementing existing agricultural programs. Lawrence (35) stated in The Shepherd:

. . . nationally cash receipts have exceeded as expenditures 17 of the last 18 years for sheep flocks, compared with only nine years for beef cow herds. Returns above all costs for sheep were positive 14 of the last 18 years (p. 50).

The exception has been from 1988 to 1991 as a result of unusually lower than expected lamb prices.

Annual small grain pasture is often adequate for finishing feeder lambs from Oklahoma, Southwest Texas, and New Mexico. Ercanbrack (15) cited a ten year wheat pasture study conducted by Noble at Ft. Reno, now the Southwest Forage and Livestock Research Laboratory, which indicated a profit in six out of seven years that pasture was available. As a result of this potential and high stockers, feeder cattle prices and low fat cattle prices during the late 1970's, producers began searching for alternative agriculture enterprises from which to derive profit. Feeder lambs on small gain pasture appeared to be an acceptable alternative complementing existing Oklahoma agricultural enterprises. Consequently, thousands of feeder lambs were grazed on wheat pasture in Oklahoma during the late 1970's and early 1980's.

Oklahoma Sheep Expansion, Inc. was organized in 1979 by producers to provide marketing service for six counties in north central and northwest Oklahoma. The cooperative expanded to include nine counties in central and northwest Oklahoma and expanded state-wide in 1983. Other marketing organizations providing services for Oklahoma sheep producers included Blackwell Lamb Teleauction, Ada

Livestock Auction, Enid Livestock Auction, National Commission Company, located at Oklahoma City Stockyards, and OKC West, near El Reno. Currently there are no in-state commercial slaughtering facility available to producers. The most accessible commercial slaughtering facilities available to Oklahoma sheep producers are located at San Angelo, Texas and Harper, Kansas. Both facilities are owned by ConAgra, Inc., Omaha, Nebraska.

These marketing organizations appeared to have provided a competitive marketing situation for sheep producers, certainly from 1984 to 1987. However, restructuring of the lamb marketing system as a result of slaughter plant closings and consolidation of existing facilities via mergers and acquisitions during the late 1980's and 1990 has limited their effectiveness. Slaughter lamb prices began descending in 1988 and culminated in 1990, 33.11 percent lower than the 28 year high established in 1987. Lamb prices continued the downward trend during 1991 and dropped into the low 40's before stabilizing in the mid 40's to mid 50's range during the May-June period.

Current economic instability confronting Oklahoma sheep producers depicts the need for comprehensive research to determine lamb marketing alternatives compatible with prevailing sheep operations in Oklahoma. The 1990's will prove a paramount era in the expansion or demise of the Oklahoma sheep industry. Oklahoma State University (OSU) has been instrumental in conducting sheep production research. However, with exception of studies by Ward, Russell and Ward, Ward and Detten, and Ward, Satten, and Epplin

information regarding lamb marketing in Oklahoma is limited. The belief that Oklahoma lamb producers would benefit from information obtained from a lamb marketing research project is justification for pursuing this study.

Statement of the Problem

Oklahoma's sheep industry may appear infinitesimal when collated with prominent sheep producing states. Never-the-less, sheep have had a profound effect on Oklahoma agriculture. Historically, sheep have remitted a profit in years when other agricultural enterprises have encountered financial predicament. During the 1980's, Oklahoma lamb producers witnessed the highest lamb prices in history (See Appendix E). Unfortunately, as producers enter the final decade of the twentieth century, lamb prices have regressed to levels equivalent to the mid-to-late 1970's.

Oklahoma has an excellent climate for raising lambs and an abundance of small grain pastures suitable for finishing feeder lambs, thus providing a unique opportunity for lamb producers. In addition, Oklahoma sheep producers have taken advantage of "out-of-season" breeding; thus, lambing in the fall, utilizing wheat pasture and selling lambs in early spring when prices are normally high.

Oklahoma ranked 21st among the states in sheep inventory on January 1, 1991. Being located in the midwest, Oklahoma lamb producers are confronted with limited accessibility to commercial slaughter facilities and have limited marketing options. Oklahoma

Sheep Expansion, Inc. was organized in 1979 as a marketing cooperative providing service to counties in north central and northwest Oklahoma. Blackwell Lamb Teleauction founded in 1982 and OKC West, located near El Reno, commenced operation in 1988. These markets along with Ada Livestock Auction, Enid Livestock Auction, and the Oklahoma City Stockyards were the predominant markets available to Oklahoma lamb producers.

These marketing organizations appeared to provide lamb producers competitive options during most of the 1980's. Events since their inception have created concern among lamb producers. According to Ward (72), the number of sheep and lamb slaughtering plants in the United States declined from 230 in 1972 to 134 in 1986. Ward (72) stated in a paper presented during the 11th annual Oklahoma Sheep Short Course, February, 1989 that:

The combined result of fewer and larger packers was an increase in buyer concentration. Concentration was defined as a measure of the market dominance of a few firms.

Concentration among packers slaughtering sheep and lambs has traditionally been high. However, concentration took a sharp increase after two significant mergers and acquisition in 1987. ConAgra purchased Monforts of Colorado in early 1987 and later that year bought Swift Independent. In 1983, ConAgra purchased Armour and Company. Therefore, after the mergers in 1987, ConAgra owned three of the largest sheep and lamb slaughtering firms. ConAgra and the next three largest sheep and lamb slaughtering firms (Denver Lamb/Iowa Lamb, Farmstead, and Superior Lamb) accounted for 75 percent of the United States sheep and lamb slaughters. This compared with 57 percent in 1972 (p. 6).

Results from an American Farm Bureau Federation (49) survey of livestock producers in 14 states revealed that one-third of the

producers had more than two potential buyers. This was half of what was available five years earlier. In addition, during those five years, 683 slaughter facilities, 372 livestock dealers and buyers, 217 auction barns, and three terminal markets reportedly ceased operation.

Results from a Farm Bureau Survey (16) has suggested that packer concentration has been positive for producers up till now. Whether this will hold true once livestock inventories reach the up cycle is unknown. Reduced livestock numbers and increased slaughter capacity tended to boost prices paid producers.

Oklahoma sheep inventory numbers have increased each year except one from 1987 through 1991. Packer consolidation has occurred simultaneously. Likewise, market competition appears to have decreased because of loss of markets. Concern on the part of Oklahoma sheep producers as to the future profitability of the sheep enterprise in our state is genuine and comprehensible. Therefore, it is evident that this study was needed to determine where Oklahoma lamb producers are marketing lambs and what factors are influencing their selection of marketing outlets. Such information will be invaluable to producers when planning future lamb marketing strategies.

Purpose of the Study

The purpose of this study was to determine production practices and selected factors influencing lamb marketing preferences among sheep producers in Oklahoma.

Objectives of the Study

In order to accomplish the purpose outlined for this study, the following objectives were declared.

1. To determine the demographic factors describing sheep producers in Oklahoma.
2. To identify selected factors influencing marketing preferences among Oklahoma lamb producers.
3. To compare demographics among producers as to their preference of marketing lamb and their production practices.
4. To determine and prioritize marketing preferences among lamb producers in Oklahoma.

Rationale for the Study

When marketing options are few and resulting competition for a given commodity is limited producers remain simply as pawns within the system. Historically, demand for American lamb has remained ahead of the industry's capacity to meet demand. This has translated into reasonable lamb prices and profitability for lamb producers in most years. Consequently, competition for lamb among markets remained acceptable. Sheep inventory numbers going into the final decade of the twentieth century have increased four years in succession. The January 1, 1991 sheep inventory report indicated the first decrease in sheep numbers since 1986 (See Appendix B). Lamb producers are experiencing lamb prices that may approach 16 year lows. Selling in markets where competition is limited may prove fatal to the existence of the Oklahoma sheep industry. If

Oklahoma's sheep industry is to survive, increased market stability and healthy competition among markets must become a reality.

Planned marketings will be essential for producer survival during this sheep industry crisis. Producers must become more knowledgeable and effective in merchandising lambs. They must become educated as to availability of alternative methods of lamb marketing. Traditionally, people do not change methods of marketing so long as they are comfortable with the organization, satisfied with proceeds received, and the process remains convenient. Change occurs only through experience and acquisition of knowledge.

Oklahoma State University has been instrumental in effecting change as evidenced by development of new and improved crop varieties, tillage systems, fertilizer recommendations, supplemental feeding and forage programs and advancement of modern computerized agricultural management systems.

Once again, OSU has a role in providing the Oklahoma agricultural community knowledge that when appropriately administered to individual situations has the contributory potential of improving their way of life. Findings from this study should provide discernment into lamb marketing alternatives within Oklahoma and provide lamb producers commensurate information from which to synthesize appropriate marketing strategies for their particular situation.

Assumptions of the Study

Concerning this research study, the following basic assumptions were made.

1. The responses made by sheep producers in Oklahoma were sincere and accurate.
2. The sheep producers in Oklahoma would identify and relate their lamb marketing preferences to the investigator.
3. All sheep producers in Oklahoma had equal accessibility to telephone service.
4. The sheep producers in Oklahoma had an equal opportunity to be selected and were representative of the target population.

Scope of the Study

The target population was defined as sheep producers in Oklahoma who were on the Extension Sheep Update Newsletter mailing list published by the OSU Animal Science Department and Cooperative Extension Service.

A random sampling of 254 sheep producers were selected from 71 of Oklahoma's 77 counties. The list of producers was ascertained from the circulation register of the "Extension Sheep Update" published bi-monthly by the Oklahoma State University Animal Science Department and the Oklahoma Cooperative Extension Service.

Definition of Terms

For a better understanding of certain items presented in this study, the following terms were defined.

American Sheep Industry Association (ASI): The service based representative organization for the sheep industry created as a result of the 1989 merger between the National Sheep and Wool Growers Association (NSWGA) and the American Sheep Producers Council (ASPC).

Block-ready Lamb: An industry coined term used by producers to describe carcasses that have been prepared for shipment to retail outlets for final processing and sale to consumers.

Break Joint: A cartilage in the canon bone at the lower extremity just above the postern. When this joint breaks cleanly a sheep is classified as "lamb." If it does not break, the carcass is classified as yearling mutton or mutton.

Case Ready Lamb: Prepackaged fresh lamb products which are ready for display in the meat case upon arrival at retail stores.

Certified American Lamb Program: Program adopted by the ASI whereby lamb carcasses must meet strict requirements regulating amounts of fat over the rib and kidneys, size of the leg and other characteristics which make lamb desirable to American consumers.

Cold-Carcass Weight: The weight of the lamb carcass after it has completely been cooled. The weight will normally average about two percent less than the hot carcass weight.

Convenience: Defined by Webster to be the fitness or suitability for performing an action or fulfilling a requirement; something conducive to comfort or ease; a suitable time or opportunity.

Dressing Percentage: The ratio of carcass weight to slaughter weight expressed as a percentage.

Estimated Kidney and Pelvic Fat: Internal fat including the kidney that is considered part of the carcass and is reported as a percentage of carcass weight.

Fabrication: The process of manufacturing consumer preferred products from the lower quality carcass cuts.

Feeder Lambs: A lamb lacking in weight and/or finish that is usually placed in a feedlot for finishing to acceptable slaughter weight and grade.

Grade and Yield: One method of marketing lambs in which price determination is made after slaughter on the basis of quality grade and carcass weight.

Guaranteed Yield: Selling lambs on the basis of a guaranteed dressing percentage. Adjustments in price are determined from lambs exceeding or not meeting the guaranteed yield.

Hot Carcass Weight: The weight of the lamb carcass taken immediately after slaughter.

Live Basis Sale: The most common method of selling lambs at private treaty and/or auction. The buyer enters a bid for the live lamb (expressed as per head or per hundred weight) and the seller accepts or rejects the offer.

Marketing Alternatives: Optional marketing methods available to producers possessing livestock for sale.

Non-Respondent: Term identifying an individual who participated in the research survey, but who did not respond or answer specific questions either because the individual chose not to provide information for a certain question or that question did not pertain to the individual's sheep operation.

Oklahoma Crop and Livestock Reporting Service: Division within the Oklahoma Department of Agriculture responsible for measuring agricultural production and providing basic statistical information on crop and livestock production.

Oklahoma Sheep Expansion, Incorporated: Lamb marketing cooperative formed in 1979 to serve producers in six counties in north central and northwest Oklahoma. Expanded statewide in 1983.

Packer: Term coined in the 1640's to describe those individuals who "salted down" and "packed" meat into barrels. Currently used to identify that sector of the meat industry involved with procurement, slaughter, processing, and preparation of meat for sale to retailers.

Packer Concentration: Term derived as a result of mergers and acquisitions of slaughter facilities to appraise market dominance by a few large slaughtering firms.

Quality Grades: Expression of carcass quality based upon a composite evaluation of conformation, maturity, and quality of the lean flesh. Expressed in terms of prime, choice, good, and utility.

Sheep/Lamb Producer: Person possessing ownership or management responsibilities for at least one head of sheep/lamb during the study year.

Slaughter Weight: The live weight of the sheep/lamb just prior to slaughter.

Standard Shrink: An agreed upon adjustment in live weights to reflect for weight loss in transit. Expressed in percentage and varies with weather, distance and management, and agreement between buyer and seller.

Value-based Marketing/Pricing: Proposed system whereby lamb will be sold on the basis of lean yield rather than by weight.

Yield Grades: Measure indicating the percentage of boneless, closely trimmed retail cuts from the leg, loin, rack, and shoulder. Expressed as numbers 1, 2, 3, or 4.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter was to present for the reader an overview related to the subject of this study. The presentation of background information was divided into four major areas of concern. These areas were: (1) Lamb marketing and promotion; (2) Lamb production, slaughter, processing, and consumption; (3) Pricing slaughter lambs; and (4) Slaughter lamb marketing alternatives.

Lamb Marketing and Promotion

Contemporary attitudes of consumers toward diet and health affords the sheep industry opportunities to increase consumption of lamb in the United States. Nutrition, according to Brown (5) ranks second only to weather as the most discussed subject. Brown further advised that over two-thirds of all dietitians recommend adults reduce dietary fat intake. Consumers are wanting of red meats that are low in cholesterol and fat. Lamb could become a staple in the diet since a three ounce serving contains excellent sources of B vitamins; supplies niacin, iron and zinc; contains 43 percent of the daily protein needs; and as a bonus, only 56 percent of the fat is classified saturated (5). Consequently, producers and sheep industry personnel must focus on satisfying consumer preferences.

Market research found that consumers conform to the ensuring categories: meat lovers, seven percent of the population; creative cooks, 21 percent; price driven, 22 percent; active lifestyle, 22 percent; and health oriented, 27 percent (52).

Vanalstyne (66) revealed that the 20-39 year old age bracket of dual-earner incomes was the largest demographic consumer group. Therefore, convenience has become increasingly important in red meat sales.

Group director of lamb marketing, ASI, Bruce (cited by 66) stated:

People are looking for a product that is convenient, available and healthy. Right now lambs are not generally convenient to use and is offered as vacuum packed primals--whole shoulders, whole legs. Some stores you go into don't even offer lamb (p. 118).

Bruce further articulated:

Education, with the aim of changing consumer behavior is a slow process that may never succeed. Successful businesses find that it is much more effective to give consumers what they want rather than educating them to buy what the industry currently offers. Those industries that try to change consumers rather than changing their products are seldom successful (cited by Vanalstyne, 61, p. 118).

One of America's foremost researchers on consumer attitudes, Florence Skelly (13), disclosed a program designed to assist the red meat industry expands its market share in competitive protein market (13). Based on surveys of consumer attitude taken three times over a five year period, Skelly concluded that industry must recognize changing consumer attitudes and adopt approaches that would: (1) communicate to consumers the positive aspects of meat

such as good taste and traditional roles in diet; (2) satisfy fitness and health concerns by designing products that are leaner, pre-cooked and conveniently packaged; and (3) counter-attack health claims against meat by conversing with health experts.

The American Sheep Industry Association (ASI) formerly ASPC, has labored diligently on behalf of American sheep producers, packers, processors, and retailers with intensive promotional and merchandising campaigns. ASI has developed programs that both advertise products and educate consumers, packers, retailers, media representatives, food service personnel, and health experts. Advertising activities included promotionals in nationally circulated consumer magazines, trade and industry journals, and newspapers; sponsorship of taste sampling demonstrations during state fairs and industry trade shows; and assisting retailers with promotional campaigns.

The American Lamb Council (ALC), the lamb marketing division of ASI, has responded with promotional campaigns designed to draw attention to fresh American lamb. Campaigns such as lambecue (30) (44) and lambecue II (40) were developed to feature outdoor cookery of leg of lamb. "A Simple Way to Sizzle," was the 1988-89 promotional theme of ALC's program devised to increase consumer awareness on the ease of preparing lamb (42). According to Bruce (cited in 42, p. 14) "this program was designed to promote growth in sales, building retail business, which in turn would build the packer business and ultimately increase producer profits."

During 1988, ASI, with assistance from marketing consultants, initiated the largest single lamb promotional campaign in the history of the sheep industry. Entitled "Simple Creativity," this program involved the industry from producer to packer, to retailer to consumer (3). "Simple Creativity" was based on the marketing principle known as positioning. According to Benson (3), marketing is concerned with finding a niche in the marketplace for a product. However, positioning goes beyond that concept. Benson declared:

Positioning takes a product or idea beyond the marketplace and creates a niche in the minds of the consumer. In our over-communicated society, consumers are assaulted constantly by product information. To stand out among the competition, a product needs a positive identity--clever nickname, a catchy slogan--to lodge itself firmly in the consumer's consciousness. Often, the most effective way to accomplish this is through simplicity, the easier it is for the consumer to remember the product, the more likely they'll respond (p. 16).

This 52 week marketing program has been enthusiastically accepted by retailers and has increased retail lamb sales as a result of its effectiveness in increasing demand for American lamb. Prior to inauguration of this program, ASI's retail marketing programs were basically short-duration campaigns that coincided with holiday or seasonal themes (23).

McNamara (cited by Jager, 23) acknowledged this 52 week program must be individually designed for each retail account. Blake (cited by Jager, 23) found 13 to 15 week promotionals offered more flexibility and were more readily accepted by retailers. Several short-duration programs throughout the year provided opportunities to monitor results more frequently. Lamb featuring

(advertising) was determined to be paramount in merchandising lamb. Featuring increased with inception of the 52 week program and Neilson Marketing Research found that featuring during the quarter ending in October, 1988, increased 67 percent over a similar period in 1987 (23).

Predictions have been made that consumers will spend 50 percent of their food dollar in restaurants by 1990. This would be a 30 percent increase since 1968 (58).

A report by the National Wood Growers (50) indicated 81.5 percent of commercial restaurants were not serving lamb. This report further related that since 1979 the number of restaurants serving American lamb had increased approximately 60 percent.

As a result of anticipated consumer patronage of the restaurant business, ASI through the ALC, has emphasized penetration of the food service market. Lamb has increased on menus across the United States as restaurant owners discovered lamb could improve the image of their establishment. Much of this increase can be attributed to aggressive media campaigns directed toward food service publications. Food service publications were deemed the primary source of new ideas for food service personnel (60).

According to Stevens and Hood (60), food service publications reach an audience estimated between 25,000 to 120,000 depending on the publications. As a result of marketing endeavors by ASI, studies have shown lamb to be the second fastest growing meat in the food service industry (6). Furthermore, during a four year period in the 1980's, food service operations offering lamb on menus

increased 43 percent (34).

Development of marketing programs designed to enhance exposure and sale of product was an important maneuver for ASI. Determination of the target audience was likewise essential. With these two incidents completed, only program implementation remained. Thus, a review of sources engaged in activating ASI marketing programs was germane if plenary comprehension of the value of such programs was to be realized.

Newspaper coverage was foremost in communicating the narrative of American lamb to consumers. Food releases complete with photographs were prepared twice per year and circulated to over 13,000 newspapers and food editors. Millions of Americans received exposure to the benefits of American lamb at no advertising cost to the sheep industry (47, 59).

Widely circulated consumer magazines and food service journals were commissioned to feature the positive attitudes of American lamb. Supportive ads have appeared in popular publications such as USA Today , Womens Day, Sunset Magazine, Southern Living, and Restaurant Management, Restaurant Business, Restaurant Hospitality, as well as Catering Today, Health Magazine, American Health, Food and Wines, and Western Foodservice. Features often coincided with seasonal promotions sponsored by ASI. Supplemental features were included as part of the continuous marketing effort reminding consumers of the special flavor and versatility of American lamb.

Advertising strategy was not limited to print media. One National Public Broadcasting System program informed viewers about

special qualities and preparation requirements for lamb. This program aired over public television in 308 markets (53).

ASI instigated a national television commercial that aired during the "Sizzle" promotion. This commercial ran for 12 weeks on cable networks offering prime time viewing in major markets such as New York, Boston, San Francisco, Los Angeles, Miami, and Tampa.

During a week long lamb promotion, a Seattle radio audience listened to a restaurant owner discuss the quality and taste of American lamb. Then too, a Washington Lamb Council sponsored program examined American lamb on another Seattle radio station.

Denver radio listeners were schooled on nutritional values of lamb, dietary information, and proper preparation of lamb by a restaurant founder who hosted a weekly call-in talk show.

Producer sponsored lamb promotions also contributed to the ASI/ALC marketing effort. Reports from Iowa revealed 10,000 lamb sandwiches were sold and over 60,000 lamb taste samples were served during the state fair. Indiana volunteers prepared and served 5,000 pounds of lamb during the Indiana State Fair (54). The Oklahoma Sheep and Wood Producers Association provided hamburgers for participants in the 1990 Annual OSU Sheep shortcourse and for those who attended the summer sheep field day. Fresh American lamb has been featured during Oklahoma Ag Day.

Packing and processing firms along with retail outlets were instrumental in the success of marketing programs initiated by ASI. John Morrell Company and Armour Packing Company prepared case-ready

lamb, thus offering consumers a wider selection of cuts and package sizes to meet their varying needs (24). Rocco Further Processing, Virginia, and ASI conducted a presentation on case-ready lamb at the Livestock Industry Congress in Seattle. Approximately 300 agricultural leaders, livestock marketing association members, and media representatives were in attendance (1). In addition, Mead (43) reported the ALC showcased American lamb during the annual trade show sponsored by the National Restaurant Association. Almost 102,000 food service industry personnel attended.

Hyvee Stores, Inc. a 149 store midwest retail chain , joined with ASI in developing a lamb merchandising program for all outlets in Iowa, Nebraska, Wisconsin, Missouri, Illinois, Minnesota, and South Dakota (61). The 1900 store Safeway chain announced all external fat would be trimmed to one-quarter inch on lamb products (57). Over 2,300 retail stores served by Oklahoma based Fleming Company participated in the ALC's retail lamb promotion programs. The Oklahoma City based national distribution center and its 23 divisions located throughout the country served 4,500 independent retailers nationwide (18).

Innovative promotions sponsored by retailers continued as evidenced by Stouffer's introduction of the first frozen lamb entree for use with microwave cooking or heating in boiling water (64). Superior Packing Company developed a new boxed and tray-redi lamb product line that was expected to reduce retailers labor costs, increase sales, and contribute to reduction in shrink at the meat counter (65).

Meat scientists at Auburn University introduced two new lamb products; a ground lamb product and a restructured lamb/soy product that reduced cholesterol, increased protein and reduced fat by 50 percent. Moreover, taste and texture were said to be superior (41).

Meanwhile, a new pre-cut, pre-packaged line of lamb products was being cooperatively developed and promoted by the state of Wyoming and interested groups from Colorado (7).

American lamb promotion was directed toward international countries processing potential lamb markets. John Morrell Company air expressed fresh American lamb to a Moscow restaurant for the 1988 Presidential Summit. This cooperative venture involved USDA, a New Orleans retailer, and the United States Meat Export Federation. This was the first ever agreement between the Soviet Union and American business as well as the first time American cooking had been open for taste sampling by Soviet citizens (48).

Representatives from ASI traveled to Japan to participate in Foodex, the second largest food show in the world with an attendance of 90,000. Japanese people reportedly have high food quality standards. In addition, 98 percent of their disposable income was said to be available for spending and a high percentage allocated to dining in fine restaurants. Hence, ASI targeted hotels, fine restaurants and gourmet supermarkets. As a result of this venture, one major packer drafted new export plans doubling its business in Japan (39).

Lamb has been forecast as the "in" food for the 1990's, by USA Today (6). Already in the 1990's, lamb has become well accepted by

college students and faculty at major universities located in cattle country. Students on meal plans have opted for lamb over fish entrees and grilled chicken. These successes have captured the attention of food service directors at other institutions who plan to expand meal plans to include lamb (45).

Low live lamb prices during the late 1980's and early 1990's have fashioned frustration and dissention within the producer community. Such producer disposition emerged in an article published in the February 1990 issue of The Shepherd. This article chastised the marketing endeavors of ASI. Excerpts from the reciprocation by Jim Bruce, Group Director of Lamb Marketing, ASI (6), appropriately summarized results of ASI marketing programs.

Bruce stated:

In 1988, production was up 7 percent; and in 1989 increased a further 4 percent. Retail prices paid by consumers for lamb increased by 2 percent in 1988 and by 3 percent in 1989. This means that consumers paid \$104 million more for lamb in 1989 than in 1987, a 16 percent increase.

To achieve increased consumption at higher prices per pound signals a significant increase in consumer demand. USA Today reported in the January 2 issue that lamb was the 'in' meat for the 1990's. Cryovar Packing Company ran double page ads in Supermarket News, stating its research showed lamb as the fastest growing items in the meat case. The National Restaurant Association reported in 1989 that lamb was the fastest growing menu item in U.S. restaurants . . .

The ALC has achieved specific goals to increase demand for lamb as a result of numerous targeted retail programs, retail case space for lamb has increased 38 percent during the past two years. The average number of retail cuts has grown 16 percent. Use of ALC's point of sale materials has increased 47 percent; and retail feature ads

with lamb increase a staggering 36 percent in 1988, and 23 percent in 1989 . . .

At the same time consumer demand for lamb has been accelerated, lamb imports have declined. . . . Lamb imports into the United States stood at 11.2 percent of total consumption in 1987, fell to 8.6 percent in 1988, and further declined to 8.5 percent in 1989. . .

Value-added further processed lamb in the form of block-ready, case-ready, and portion-controlled cuts has grown from less than 1 percent of total production in 1987 to more than 10 percent in 1989. Part of this growth is attributed to the ALC's product development and research programs. Every major packer has participated in an ALC co-funded program to develop or launch value-added lamb programs.

Efforts to broaden the lamb consumption base also have proven fruitful. In 1987, it was estimated that 40 percent of our total lamb production was consumed in the northeastern United States. ALC worked to reduce dependence on such a limited geographic area; and today, the northeast accounts for only 31 percent of total lamb consumption. Kroger, the nation's largest retailer, reports that as a result of comprehensive marketing program developed and supported by the ALC, its top two lamb divisions are now Atlanta and Houston. . .

As a result of ALC staff and leadership work, closely coordinating export market development programs with major packs, U.S. lamb export rose 395 percent in 1989, vs. the previous year. . . .

Live and wholesale prices at the end of 1989 and through mid-February 1990, are at an all time low. The ALC's programs have not resulted in higher dollar returns to the producers funding such programs. . .

Basic principles of marketing state that when demand by the end user of a product increases, all levels of production should benefit. This has not happened in the lamb industry. Our producers have not benefited from increased demand. . .

Our industry is faced with some gross structural problems in its production and marketing system, which allows retail prices to rise, while wholesale and live prices decline (pp. 8-9).

ASI marketing efforts have had positive influence on the industry. However, obvious perplexities within the production and marketing systems have had devastating repercussion on producer income. To better understand lamb marketing, consideration must be focused on where lamb is produced, slaughtered, processed, and consumed.

Lamb Production, Slaughter, Processing and Distribution, and Consumption

Sheep and lamb are produced in all regions of the United States. However, over 80 percent are located in the 17 western states. All but one of the top 11 states in 1970 were the same in 1986. Leading states in 1986 were Texas, California, Wyoming, South Dakota, Utah, New Mexico, Montana, Colorado, Oregon, Idaho, and Iowa (63). These 11 states accounted for 74 percent of all stock sheep in the United States.

Ralston (55) pointed out that these 17 western states represented only 35 percent of all sheep operations in the United States. He attributed this to the fact that large flocks of sheep were required to efficiently utilize the semi-arid grasslands common in the western states. Flocks of 1,000 to 10,000 head are common in the western states where as in the farm flock regions of the eastern United States flocks of 10 to 500 head are the norm.

Jordon (26) reported that the combination of fewer sheep, aging and inefficient packing plants and meat plant closures had resulted

in the number of slaughter facilities in the United States declining to less than ten percent of the number present in the 1940's. Ward (72) concurred that the number of slaughtering plants had declined as the inventory of sheep and lambs declined. Ward further stated that the combined market share of the four largest packers slaughtering lambs had been higher than for other species. He pointed out that mergers and acquisitions during 1987 created a situation whereby the combined market share of the four largest firms increased dramatically.

Ward (72), during a presentation to the 11th Annual Oklahoma Sheep Short Course, discussed trends in sheep and lamb slaughtering.

According to Ward:

The number of sheep and lamb slaughtering plants reporting to the Packer and Stockyards Administration (P&SA) declined from 230 in 1972 to 134 in 1986. The decline in number of plants has affected the largest size plants as well as the smaller ones. However, the importance of the larger plants has increased. In 1986 just 8 plants accounted for 75 percent of sheep and lamb slaughter reported to the P&SA.

Over the same 1972-1986 period, sheep and lamb slaughter has shifted geographically. Nebraska, New Jersey, and Utah are no longer among the leading states, having been replaced by Minnesota, Kansas, and Washington. The three leading states remained the same but slaughter was slightly more concentrated in those three states in 1986 (54 percent) than in 1972 (50 percent). A similar trend was found for the 10 leading states, 93 percent in 1986 versus 89 percent in 1972 (p. 3).

Geographical redistribution of lamb slaughtering facilities, increased mergers and acquisitions, and the changing of plants has caused the question of competitiveness of the meat packing

industry to resurface. Ward (71) recapitulated this question was not new. He indicated this concern was prevalent during the 1800's, 1920's, 1940's and 1970's. Guebert (22) stated that ag economist John Conner had projected that 50 food companies would control 90 percent of the assets in the food industry by the year 2000. According to Guebert (22), Geithman cited an example, in the meat processing industry where just three packers, ConAgra, Excel, and Iowa Beef, control nearly the entire meat industry. He indicated these three had a powerful position over producers from whom they purchase inputs and food retailers to whom they sell their products. Perhaps the pertinent question of concern centers on whether or not the powerful few will conspire to adversely affect procurement prices paid producers and/ or wholesale prices charged the food industry, ultimately resulting in higher retail prices.

The ASI along with several livestock producers and marketing agencies discussed concentration in the meat packing industry. They concluded the P&SA must have more authority to determine whether the federal government should challenge proposed mergers and acquisitions (37). However, the U.S. Justice Department ruling during the summer of 1990 turned down a request to conduct an investigation on concentration in the meat packing industry (27).

At this time it would appear that concentration has not had negative impact on the sheep industry. Rather, positive benefit may actually have occurred because of the increased efficiency of slaughter facilities associated with mergers and acquisitions. Long term effect on the industry remains in question and will depend on

future structured changes and influence exerted on the industry as a result.

Consumers are demanding of lean meat pre-packaged in small portions that are easy to prepare. Therefore, development of prepackaged products that satisfy consumer preference must become a priority of the industry. Traditionally, lamb has been shipped in carcass form. According to ASI (32), about 65 percent of lamb received by retailers was in carcass form. However, the development of fabricating lamb carcass in the plant where slaughtered has been an important development within the processing phase of the industry. This process allows lamb products to be vacuum-sealed and shipped in cardboard boxes. More pounds of lamb can be transported because fat and bone have been removed. This permits freight costs to be reduced as well as shrink and loss due to dehydration.

Boxed lamb has improved merchandising capabilities because shelf life has been increased and retailers afforded the opportunity to purchase only those cuts of lamb that consumers prefer. Boxed lamb has broadened distribution opportunities and increased the variety and convenience of handling lamb for retailers. As the adoption of this process becomes more widespread within the sheep industry so will the opportunity to increase sales volume of fresh American lamb.

Most lamb has been consumed in the Northeastern and Western coastal states in densely populated areas. According to ASI (11), over half of the total U.S. consumption occurs in the northeast and

mid-Atlantic region with New York accountable for 30 percent. California is second with about 17 percent. Mead (46) reported that Iowa State University economist Gene Futrell had indicated lamb consumption was unevenly distributed with the northeast accounting for 50 percent, California 20 percent and about 11 percent in the Chicago area.

Grauberger (21) reported that in 1987, the northeast market, centered in New York, consumed 40 percent of the production where as in 1990 that area accounted for only 33 percent. This may be attributed to marketing efforts to expand consumption of lamb in the mid-west and southern states where consumption has traditionally been less than the 1.6 pounds per capita.

Pricing Slaughter Lambs

Dressing Percent

According to Wyman (75), two practices currently utilized in the lamb marketing in no way relate to production of a product with the consumer in mind. Wyman was referring to use of dressing percent and weight brackets. Dressing percent has been defined by Gill and Rawls (19) as a term describing the carcass weight in relation to live weight. During slaughter, the hide, head, feet, internal organs, and other parts are removed and only the carcass remains. The amount of carcass each lamb produces is of interest to the packer because it is used in determining the value of the lamb. Dressing percent may be expressed mathematically as follows (4):

Dressing Percent = Chilled carcass weight ÷ live weight x 100
 Extreme range: 40-60 %
 Normal range: 45-58%
 Average: 53% (shorn lambs)

Factors that increase dressing percent:

1. Light weight digestive tract and weight of contents within digestive tract.
2. Increased finish.
3. Light weight pelt (influenced by hide weight and fleece length) (p. 127).

Wyman (75) indicated dressing percent most likely was initiated by packers about the time central markets declined and country buying became popular. Shrink percentages were applied to live weight of lambs to compensate for distance from slaughtering facilities. As a result, the higher the dressing percent the better the price paid producers. This antiquated system of pricing lambs has become the omnipresent impediment within the sheep industry. This impediment conveys on the reality that as dressing percent increases there is a corresponding increase in amount of finish. The end result has become lamb carcasses that possess too much fat which must be trimmed to meet consumer preference. This becomes costly for the processor/retailer who must remove excess fat and also for the producer/feeder since 2.25 times as much energy is required to form a Kg of body fat as is required to form a Kg of body protein (10).

Dressing percent has been an important factor in pricing slaughter lambs. According to Gill and Rawls (19), one pound of extra weight in the live lamb increases dressing percent by one-half of one percent. Therefore, factors affecting dressing percent such

as feeding, sorting, hauling, stress, fill, wetness, tags, tails, and long fleece must be considered when preparing lambs for market.

A second antiquated system used to market slaughter lambs involves weight. Common practice of pricing lambs has been associated with weight brackets. Prices of live lambs usually reflect their carcass value. Currently, 45-55 pound carcasses from 110 pound or less live weight lambs are preferred and priced higher than the 55-65 pound or 65 pound and above carcasses. These carcass classifications were derived from the assumption of a dressing percent of 50 (19). This archaic carcass classification system penalizes all lambs having genetic potential to develop muscular carcasses at live weights between 110 pounds and 130 pounds or more. Packers have stereotyped all lamb produced to be over finished if live weight exceeds some mesmerizing weight range.

Slaughter lambs should be priced on a basis consistent with consumer demand. Consumers are wanting of lean meats and producers should be rewarded for providing lean lamb. A price discovery system must be developed which eliminates bias based on live weight. Producers must be paid for producing high cutability carcasses, regardless of weight. Weight bracket inconsistency that has plagued the sheep industry must be alleviated. The argument that 45-55 pound carcasses from 90-110 pound live lambs are ideal because carcasses above that weight range are over finished is little more than rhetoric from packers who are unwilling to make a commitment to improve the sheep industry going into the twenty-first century.

Alternative Methods of Pricing Heavy Lambs

According to Ward and Detten (73), the percentage method of discounting heavy lambs assigns a pricing discount to the proportion of lambs determined to produce heavy carcasses.

Another pricing method used to discount heavy lambs has been termed the sliding scale method. Ward and Detten (73) reported that a discount per pound is applied to each pound of average weight over a set amount. They indicated a discount in cents per pound times the number of pounds over the set amount would be subtracted from the bid price. A variation of the sliding scale method applies a weight discount to the entire weight of lambs exceeding the weight limit rather than the excess weight. This variation more severely discounts heavy lambs.

A third method of pricing heavy lambs has been referred to as the weight stop method. A maximum weight is pre-determined by the packer. If lambs average above the maximum weight, packers pay only on the maximum weight agreed upon. Ward and Detten (73) revealed that packers actually purchase lambs on a per head basis rather than per pound basis when the weight stop method is applied.

One other method used to purchase lamb is the guaranteed yield method. Ward and Detten (73) described this procedure as one where a bid in dollars per cwt. for a specified guaranteed yield in percent on either a hot or cold carcass basis was specified. Therefore, if the lambs yield higher than the specified guaranteed yield, producers benefit. Likewise, if lambs yield less than the

specified guaranteed yield, the packer benefits. They concluded the guaranteed yield method was advantageous to producers who consistently market high yielding lambs and imposed penalties on producers whose yields were average and fluctuated widely.

Yield Grades

Yield grade is a term employed to define the amount of usable meat obtained from a carcass. According to Jones et al. (25), yield grades identify carcasses for differences in expected yield of the trimmed retail cuts from the leg, loin, rack, and shoulder.

Boggs and Merkel (4) explained that yield grade was based upon the four closely trimmed retail cuts which represent 80 percent of the carcass weight and approximately 90 percent of the carcass value. They further revealed that about 66 percent of the carcass value was in the hind saddle.

Gill and Rawls (19) stated:

Lamb carcasses of the same weight and quality grade vary considerably in fat and muscling which accounts for variations in yield of cuts and value. Yield grades provide a nationally uniform method of identifying carcasses for differences in 'cutability', or the percent of trimmed retail cuts.

The five USDA yield grades are numbered 1-5. Yield grade 1 carcasses have the highest yield of retail cuts and yield grade 5 the lowest. Yield grades are based primarily on fat thickness (the fatter the lamb, the higher the yield grade, and the lower the yield of retail cuts) with adjustments for the quality grade (p. 7).

Yield grade of lamb takes into account three characteristics:

- (1) amount of external fat, (2) amount of kidney and pelvic fat (KP), and (3) conformation grade of the leg. According to the

Livestock and Meat Board (33), the amount of external fat is the most substantial yield grade factor since it is a reliable indicator of the amount of fat that is trimmed in making retail cuts. They further explained that the amount of KP fat is expressed as a percent of carcass weight and that as the percentage of KP fat increase, the percentage of retail cuts decreases. Likewise, an increase in leg conformation grade results in an increase in yield grade.

The official standards include the following equation for determining the yield grade of a lamb or mutton carcass (33):

$$\text{Yield Grade} = 1.66 - (0.05 \times \text{leg conformation grade score}) + (0.25 \times \text{percent kidney and pelvic fat}) + (6.66 \times \text{adjusted fat thickness, inches}) \text{ (p. 60).}$$

This equation has been adapted to a more usable form which decreases the number of calculations. This "simplified method" establishes a preliminary yield grade based on fat thickness over the rib eye. A final yield grade is derived by adjusting for the three aforementioned characteristics (Appendix L).

Certified Lean Lamb Program

This pricing method was adopted in 1990 by ASI. The certification program takes aim at fat on lamb carcasses. The certified lean lamb program is a value based program concerned with marketing lean yield rather than total pounds. Therefore, weight is not important. Under this program a growing percentage of lamb carcasses would be sold as value-added cuts and no longer would

there be reason to reward producers for higher dressing animals. Packers would have to trim excess fat from these higher dressing animals and under this program there would be no incentive for them to continue doing so. The long term benefit in the sheep industry, or a result of this program, would be production of a consumer-preferred product for which the producer would be rewarded.

Ward (69), speaking during the 12th annual Oklahoma Sheep Short Course, explained the criteria of the certified lamb standards:

The certified lamb program will be applied to lamb carcasses and implemented at the lamb slaughtering stage. Lambs qualifying for certification are not required to quality grade USDA choice, but nearly all will meet quality grade choice standards. Lambs must have: (1) break joints at both trotters; (2) leg conformation score of average choice or higher; and (3) no evidence of bulkiness. Lamb carcasses must have between .1 and .25 inches of barkfat measured at the 12th rib, and can have not more than 4.5 percent untrimmed kidney and pelvic fat on a hot carcass basis . . . (p. 2).

Ward further indicated that lamb carcasses meeting minimum certification standards would have a yield grade of 3.87 or more and would average 2.98. Lamb carcasses failing to meet certification standards would have a yield grade of 4.57. Certified lamb carcasses would yield an average of 70.42 percent of trimmed or retail cuts, while noncertified lambs would yield an average of 65.56 percent.

Ward (69) revealed that ASI research showed 37.2 percent of lamb carcasses, graded according to certification criteria, met or exceeded certification standards. Furthermore, the 62.8 percent that failed to meet certification standards did so because they were too fat.

As expected, it will require time for the certified lean lamb program to gain acceptability. Producers must be rewarded for producing an acceptable consumer-preferred product. A consistent, stable supply of lean lamb will become available as more and more producers are rewarded for their effort. The willingness of packers to cooperate with the industry is extremely critical to the success of this venture.

Lamb Marketing Alternatives

Electronic Marketing

Electronic marketing has been described by Ward and Russell (74) as marketing of farm products involving the aid of modern communication and technology. Electronic marketing of lamb involves the use of teleauctions and/or computer auctions. These methods of marketing lamb evolved in response to the relocation of slaughter facilities and the corresponding decline in buyer competition. Electronic marketing provides consignors an opportunity to expose lamb to more potential buyers than conventional marketing methods. Likewise, distant buyers have access to products that would otherwise be too costly to purchase. With this lamb marketing alternative both producer and buyer benefit. Producers can cooperatively pool loads of lambs which reduces their marketing costs and provides potential buyers a uniform quantity of product they can afford to compete for since procurement costs are lowered.

Teleauction

A teleauction is a type of electronic market where lambs, buyers, and auctioneers are at separate locations. Ward (70) has explained that in Oklahoma teleauctions, lambs remain on the farm until after the sale. Potential buyers may be located in Texas, Colorado, South Dakota, Illinois, Minnesota, or Michigan. Each prospective buyer may bid on lambs via a conference call conducted by an auctioneer located in a bank building in north central Oklahoma.

Teleauctions were first used in 1971 to market lamb in the Virginias. A second teleauction was started in Oregon and Idaho in 1974 and Oklahoma producers began marketing via teleauctions in 1979 (70).

OK Sheep Expansion Inc., a producer-organized marketing cooperative, structured the first lamb teleauction in Oklahoma. Producers informed the cooperative marketing coordinator they had lambs ready to market. The marketing coordinator would gather descriptive information pertaining to number, age, sex, tailed or docked, and woolled or shorn. Utilizing this information, the marketing coordinator puts together a load(s) of lambs and contacts the marketing agency responsible for conducting the teleauction. Descriptive information is shared with the marketing agency and details concerning deductions for price differentials on lambs not meeting marketing standards are established and prospective buyers notified.

On sale day, an auctioneer contacts a conference telephone operator who calls each prospective buyer. Once the auctioneer determines all prospective buyers are online, a complete description of the lambs are provided. Likewise, buyers are provided information as to where lambs will be assembled for delivery within the next seven days. Lambs are then auctioned in load-lots to the highest bidder.

The successful buyer is contacted by the marketing cooperative after the teleauction to complete arrangements for loading and delivery of lambs. Likewise, consignors are contacted and informed as to when and where lambs will be assembled for delivery. At the assembly location, lambs are sorted, weighed, and loaded for delivery. Producers are paid at the time of loading. Marketing charges are deducted from the producers' payment along with adjustments for price differentials.

According to McKee (38), packers like electronic lamb marketing and are willing to be competitive because:

- (1) They can eliminate stationing several buyers in lamb producing areas,
- (2) the lambs are fresh when received for slaughter,
- (3) the lambs are graded and of similar quality and reasonable in uniformity,
- (4) sales are made on load-lots basis, thus minimizing transportation costs, and
- (5) the buyers are spared the time and labor of settling individual accounts with the often large numbers of producers that may comprise a load of lambs (p. 350).

Consignors also benefit from electronic lamb marketing. Russell and Ward (56) reported that producers had complained of inadequate buyer competition prior to the introduction of teleauction marketing. Producers indicated they often only had one

or two buyers bid on lambs. Ward (70) also revealed that prior to 1979, producers in north central Oklahoma either sold to the only market in Oklahoma or marketed at Wichita, Kansas. He further indicated that the nine closest lamb slaughtering facilities to Oklahoma that slaughtered 100,000 or more lambs per year were located in Texas, Colorado, South Dakota, Minnesota, Illinois, and Michigan. As a result of the teleauction, buyers who ordinarily did not bid on Oklahoma lambs were afforded the opportunity to purchase load-lots.

Russell and Ward (56) summarized the effects of lamb teleauctions in Oklahoma as follows:

Making lambs available to packers over a wide geographic area has increased competitive bidding for Oklahoma lambs. Both the number of bidders and the number of packers of purchased lambs have increased. The number of bidders at each teleauction ranged from two to five the first marketing year, two to seven the second year, and two to six the third year . . . Oklahoma lambs were bought by four packers the first marketing year, six the second year, and seven the third year (p. 1).

Ward (70) also determined that 10 of the 12 teleauction sale prices exceeded the weekly average price at Wichita for the same week as the teleauction. In addition, he reported the teleauction price was above the San Angelo weekly average price for seven sales, equal for one sale, and below for four sales.

Teleauctions have provided small operator producing lamb a competitive marketing alternative. By pooling loads of lambs with other Oklahoma lamb producers, a quantity of acceptable product can be offered in a competitive atmosphere where both buyer and seller benefit.

Computer Auctions

Computer Auctions are the result of advances in communication technology. The procedural mechanics required of teleauctions is similar for computer auctions. Computer auctions are different essentially in that the equipment is technologically more advanced.

OK Sheep Expansion Inc. changed from teleauction to computer sales in 1982. To facilitate this change, they contracted with Corn Belt Lamb - Electronic Market (CBL-EM) to sell lambs on a computerized system. Russell and Ward (56) have indicted the communication networks associated with their system allows access via local telephone calls in cities throughout the world and via In-Watts Service throughout the United States. They have explained that buyers bid by preset increments (\$.25/cwt. for lambs) by pressing a key. CBL-EM control certain aspects of the sale such as start-up time, decision of sale or no-sale, starting the bid on each lot, time between sale lots, stopping of the sale, and preset bid increment.

Russell and Ward (56) reviewed the responsibilities of OK Sheep Expansion and CBL-EM and offered this summary:

OK Sheep Expansion, Inc. responsibilities included (1) promoting producer interest; (2) maintaining reputation for quality lambs; (3) maintaining a schedule of discounts; (4) specifying weighing conditions; (5) assembling and grading lambs; (6) dispersing payment to producers; (7) maintaining own records; and (8) providing input to CBL-EM.

CBL-EM would be responsible for (1) promoting buyer interest; (2) operating the computerized sales; (3) collecting payment from buyers; (4) sending

payment to OK Sheep Expansion, Inc.; and (5) promoting computerized marketing to other lamb producer organizations (p. 3).

The difference between teleauction marketing and marketing by computer is essentially sales promotion performed by the marketing agency. Although assembly and grading procedures between teleauctions and computer auctions are relatively the same, procedural differences do exist. Unlike teleauctions, data concerning descriptive information about the lambs are entered by CBL-EM into the computer for easy access by potential buyers. Buyers have individual identification numbers, known only by CBL-EM, which allow them access only to information about the lambs being offered. Buyers can print out details about the forthcoming sale and determine how much to bid in their office. Buyers then get back on-line prior to the beginning of the sale. CBL-EM establishes the starting price for the lot and the price decreases \$1.00/cwt. every 20 seconds until a bid is accepted or the lot cancelled (56). Buyers bid anonymously by pressing a specified key on their computer terminal. Once a bid is received, the price advances until 20 seconds elapses without further bids. At this point, the computer either declares the lot sold or cancels the lot.

At the conclusion of a sale, buyers receive summary sheets of lots purchased along with phone numbers of people to contact concerning assembly and delivery of lambs.

According to Russell and Ward (56), buyer support of computerized lamb selling is strong. They concluded the strong support was due to buyers' preference for written descriptions of

lots offered several hours before the auction, minimum time required to conduct the sale and the strict confidentiality of buyers.

Video Auction

A third type of electronic marketing method is termed video auction. Although the first video auction held in Oklahoma involved breeding sheep, the method is seldom used today to market lambs. According to Ward and Russell (74), feeder cattle are successfully merchandised using the product for sale. This required a cameraman visit each ranch and tape the livestock being offered for sale. Unlike teleauctions and computer auctions, buyers must assemble at a designated location to view the video tapes, hear the verbal description of the lots being offered, and how the livestock will be delivered. Livestock are sold to the highest bidder and then shipped directly to the buyer.

Direct Marketing

Direct marketing can include several marketing methods. For the purpose of this study, direct marketing will be limited to the following: (1) direct to packer/feedlot and (2) direct to the consumer.

Few slaughter lambs in Oklahoma are sold directly to packers. Most direct sales to packers involve large numbers of feeder lambs. Likewise, feedlot buyers or order buyers may purchase directly from producers. Marketing directly to packers or feedlots can be advantageous for the producer. Commission charges and order

buyers fees may be eliminated, but the seller must be certain that adequate buyer competition occurs. Also, costly hauling, unloading and reloading of lambs can be eliminated through direct marketing. Direct marketing would appear to have merit for large operators who have consistent supplies of uniform lambs.

Producers who sell lambs locally to consumers are also engaged in a type of direct marketing. Usually, these are small producers who operate a locker lamb or freezer lamb business. These terms describe a marketing system where producers sell live slaughter lambs directly to the consumer and frequently deliver the lambs to the slaughtering facility as part of the sales agreement. This system of marketing was developed because lambs must be slaughtered at state/federally inspected facilities if the intent is to sell lamb carcasses. However, you are permitted to sell the live lamb, deliver it to the slaughtering facility and deliver the meat to your customer as long as the customer is charged the slaughter cost (51).

Selling locker/freezer lambs can be a lucrative business provided good management practices are followed both in developing the market and providing the product. Considerable time, energy, patience, and professionalism is required to develop the business. Knowledge and understanding of legal aspects surrounding custom lamb sales must be acquired. Many people would be lamb consumers if more product was available to them. Often, people in small communities have a difficult time purchasing lamb because it is not readily available in supermarkets. A well orchestrated locker lamb business

can provide financial reward and simultaneously satisfy a consumer need.

Lamb Contracting

Contracting is an agreement between two or more parties to conduct business. Contracting in the sheep industry can guarantee a producer a minimum price level above breakeven costs. Packers can benefit from contracting the advance planning lamb slaughter to protect themselves against radical markets.

According to Stutzman (62), two basic type of lamb contracts are offered by packers; fixed price contract and variable price contract. Fixed price contracts provide producers a set price upon delivery. It is the most inflexible and requires additional market information to make a proper decision. Variable price contracts provide more flexibility for both packer and producer and is the contract of choice for most lamb feeders. A floor price is established which guarantees a minimum price no matter what the market does. Optional ceiling prices may be included as well. This protects the packer from market uncertainty as well. Stutzman (62) further indicated that packers often leave the ceiling open and base the price on the local market price for the week you deliver. Usually their price is calculated using the average for the first three days of the week you deliver. This procedure is often used when supplies are short and demand is good.

Most lamb contracts have stipulation that address discounts for heavy lambs, muddy pelts, delivery schedules and locations, weighing

conditions, shrinks and yield guarantees (20, 31, and 62).

Before any contract is signed, it behooves producers to read and understand every stipulation included. Once signed, the contract becomes legal and binding. Producers who have a good reputation for producing clean, high yielding lambs are in the best position to take advantage of lamb contracting.

CHAPTER III

DESIGN AND METHODOLOGY

Introduction

The purpose of this chapter was to illustrate the methods used and the procedures followed in conducting this study. In order to collect data which would provide information relating to the purpose and objectives of this study, the sample was determined and the instrument was developed for data collection. A procedure was established and methods of data analysis were selected. Information was collected during a three-week period in December, 1989.

This study was coordinated with the assistance and cooperation of the Oklahoma State University (OSU) Animal Science Department, Agricultural Education Department, Oklahoma Cooperative Extension Service, and the investigator's graduate committee members.

The telephone survey instrument developed for this study was designed to determine the selected factors influencing the preference of lamb marketing alternatives among sheep producers in Oklahoma.

The Sample

The sample for this study was derived from the list of names, mailing addresses, and/or telephone numbers of Oklahoma sheep producers receiving the Sheep Update newsletter published by the OSU

Animal Science Department and the Oklahoma Cooperative Extension Service. The names, mailing addresses, and/or telephone numbers of sheep producers were provided to the investigator by Dr. Gerald Fitch, State Sheep Specialist and the late Sid Ercanbrack.

The total number of Oklahoma sheep producers whose names appeared on the mailing list was 750. All known Agricultural Education instructors, OSU faculty/staff personnel, and Oklahoma Cooperative Extension Service personnel were excluded from the list of names. Therefore, a method of selecting a sample size for a finite population of 750 was obtained from Krejcie and Morgan's (29) book entitled Educational and Psychological Measurement. The formula was as follows:

$$S = \frac{X^2 NP (1-P)}{d^2 (N-1) + X^2 P(1-P)}$$

Where:

$$\begin{array}{ll} S = 254.236 \text{ or } 254 & X = 3.841 \\ P = .5 & N = 750 \\ \text{Then:} & d = .05 \end{array}$$

$$\begin{aligned} S &= \frac{3.841 \cdot 750 \cdot .5(1-.5)}{(0.5)^2 \cdot (750-1) + 3.841 \cdot .5(1-.5)} \\ S &= \frac{720.1785}{1.8725 + .96025} \\ S &= \frac{720.1875}{2.83275} \\ S &= 254.236 \text{ or } 254 \end{aligned}$$

An explanation of the formula includes: required sample size = S ; the given population size = N ; population proportion = P ; the degree of accuracy as reflected by amount of error = d ; and X^2 is equal to the table value of chi square for one degree of freedom (pp. 607-610).

Due to the need for an accurate representation of the entire population of Oklahoma sheep producers a confidence interval of .95 was chosen. This confidence interval would allow generalization back to the population of Oklahoma sheep producers. Krejcie and Morgan's (29) formula showed a representative sample of 254 sheep producers would provide the required sample to insure the .95 confidence interval needed.

Sampling Method

The sampling procedure selected was a random sampling technique obtained from Bartz (2), in his book entitled Basic Statistical Concepts and the Behavioral Sciences. In addition, Van Dalen (67) in expressing strategies concerning descriptive research and selecting a sample population stated that:

Obtaining information from a large population, such as all the teachers in the state, is often impractical, impossible, or exorbitantly costly. Contacting, observing, measuring, or interviewing every unit in the group may absorb so much time that the data become obsolete before the study is completed. To overcome these difficulties, investigators often collect information from a few carefully selected units drawn from a population. If these sample units represent accurately the characteristics of the population, generalizations based on the data obtained from them may be applied to the entire group (p. 205).

Random Selection of Individuals

The sample of sheep producers was chosen in such a way that each sheep producer had an equal chance of being included in the sample. According to Bartz (2), the generally accepted method of obtaining a random sample was to use the much preferred table of random numbers. Bartz further stated:

A table of random numbers is a collection of random numbers, random in that any digit or any grouping of four digits bears no relationship to any other digit or grouping of digits in the table. In other words, in any position in the table of random numbers, each digit from 0-9 has an equal chance of appearing (p. 153).

Several steps were then followed in the sampling procedure. The first included assigning a number to each sheep producer whose name appeared on the Sheep Update newsletter. The first sheep producer on the list was assigned the number one and the last sheep producer was respectively assigned the largest number. For example, the total population was 750 sheep producers. Numbers were assigned to each producer from one to 750. The second step involved Bartz's (2) table of random numbers. From the starting point within a table of random numbers, as many numbers from the columns (maintaining consistent direction--laterally to the right) were drawn as needed to obtain the required sample size. It is important to note that duplicate numbers were ignored by the investigator and the next non-duplicate number was selected to be included in the sample. The sheep producers whose assigned number corresponded to the randomly selected number constituted the sample.

The third step involved securing telephone numbers for the sheep producers who had been randomly selected. Some telephone numbers were available from the Sheep Update newsletter listing. However, many were not available. The latest edition of public telephone directories were utilized to locate available telephone numbers.

The fourth and final step involved replacement of randomly selected sheep producers whose telephone numbers could not be determined and/or those sheep producers when contacted by telephone were discovered not to be sheep producers. In other words, the randomly selected sheep producer whose telephone number could not be found and/or those who no longer were engaged in sheep production were replaced with the next randomly selected sheep producer drawn from Bartz's (2) table of random numbers. It was estimated that an "over sample" of 33 percent would be sufficient for replacement purposes. Therefore, the total "over sample" was 85.

An acceptable randomly selected sheep producer was one who possessed ownership or management responsibilities for at least one head of sheep/lamb during the study year, resided within the state of Oklahoma, had access to telephone service, and was given an opportunity to respond to the telephone survey.

Development of the Instrument

In the preparation of an instrument to meet the objectives of the study, the first step was to review and evaluate instruments used in similar studies.

In analyzing various methods of data gathering, the questionnaire and interview methods were determined the most appropriate to meet the study objectives. Wallace (68) provided the following information regarding questionnaires:

Although mail questionnaires are often the most practical and economical method of obtaining data, some investigators hesitate to employ them because they tend to yield low percentage of returns and relatively incomplete responses (p. 40).

According to Levine and Gordon (36) the degree to which a questionnaire elicits the desired information depends considerably upon the manner in which it is conducted. Despite the most diligent effort in respondent preparation and questionnaire design, a considerable number of respondents will fail to respond to the initial mailing. Researchers have stated that first mailings will generally produce a percentage return up to 40 percent. Other researchers consider 40 percent an optimistic percentage with 20 to 30 percent more realistic.

Interviews are conducted orally, in person, by administering a structured set of questions to each member of the sample. However, the interview technique is generally expensive and time consuming, and usually involves smaller samples. Due to the expense and time required to conduct personal interviews, this method was deleted from consideration.

In several research studies conducted by the Oklahoma State Department of Vocational and Technical Education, the use of the telephone interview provided response rates of 93 to 95 percent. Also, a research study conducted by Cosner (9) employed the

utilization of the telephone interview technique of surveying. Cosner's research study yielded a 66 percent plus response rate as a result of surveying an infinitely large population (approximately 2.6 million individuals) with a sample size of 2401 individuals. Furthermore, a research study by Finley (17) produced a 77 percent response rate (1194 of 1556 respondents).

A review of the economics (expenditures) of Finley's research caused the investigator to conclude the telephone survey interview to be as economical, if not more so, as other more conventional data gathering techniques (such as the mailed questionnaire); and certainly based on those past studies, the assurance of a high yield of data seemed apparent to the investigator.

Based on the success of past telephone survey interviews, the high response rate provided by the use of the telephone interview prompted the investigator to utilize the telephone survey interview as a method of data gathering.

After determining the telephone survey interview as being the most appropriate method of data gathering, several steps were taken to make the instrument useful for determining production practices and selected factors influencing the lamb marketing preferences among sheep producers in Oklahoma. The steps are as follows.

The first step in the preparation of the interview schedule was to compile a list of selected questions that were relevant to accomplishing our purpose. In addition, to aid future research concerning the sheep industry in Oklahoma, it was determined pertinent to ask sheep producers questions pertaining to

demographics and production systems. These questions were derived from collaboration between the investigator and major adviser along with advice from a member of the investigator's graduate committee.

The second step was to make the necessary revisions and then test the applicability and continuity of the questions to be used. The questions were then field tested in mock telephone interviews. Several valid comments and questions were raised by the persons cooperating in the mock telephone interviews. This allowed the investigator to strengthen several areas within the interview schedule.

The third step was to provide the investigator's major adviser and a member of the graduate committee a copy of the revised interview schedule for their final reaction and comments.

The fourth step was to take into consideration the comments and suggestions for improving the interview schedule. Appropriate improvements were made in the interview schedule and a typed copy submitted to the OSU Internal Review Board for final approval (AG-90-002). Upon receiving approval, the interview schedule was considered ready for use.

The fifth step was to develop a system for coding each of the questions on the interview schedule. The coding system was needed to provide a method of ease and consistency in keypunching answer sheets for the interview schedule. To accomplish this, an interview schedule containing a built in coding system was developed and implemented.

Throughout the process of developing the interview schedule, the length of the instrument was of concern. Several individuals felt that it would be extremely difficult to get people to provide needed information if the interview schedule was too extensive. The length of the interview was prudently considered in the preparation of the interview schedule. The interview schedule was designed to require a minimum amount of the respondent's time and yet provide the needed information. It was resolved that the final interview survey could be completed within five to eight minutes depending upon the caller and the respondent.

The final step included conducting a telephone survey to test the interview schedule. This was accomplished by telephone interviewing three sheep producers known to the investigator.

It was then decided the interview schedule was ready to be administered to sheep producers who had access to telephone service and resided within the state of Oklahoma.

In its final form, most of the questions on the interview schedule utilized the forced response format. In addition, several questions did not have equal intervals between the selected responses. This format allowed data of a quantitative nature to be obtained, thereby facilitating analysis of the data. There were also several questions on the interview schedule designed to obtain qualitative responses. The final form of the instrument survey may be found in Appendix A.

The survey instrument used for this study contained 14 questions specifically related to the respondent's personal

demographic data, two questions specifically related to the sheep production phase, and seven questions specifically related to sheep marketing.

Coordination of the Study

Substantial effort was expended to insure proper coordination and understanding of the interview instrument and its component parts, as well as the purpose of this study, by the individuals participating in the telephone survey. These individuals included one OSU undergraduate student and one OSU graduate student.

To insure the individuals (callers) who were employed to telephone the sheep producers completely understood the purpose and objectives of the study, the investigator determined it necessary to conduct an orientation of the callers before the telephoning commenced. Considerable effort was devoted to the callers providing information designed to maximize consistency of the callers in asking questions and gathering data. Considerable time was devoted to reviewing the survey instrument and its component parts. The investigator reviewed terminology contained within the survey instrument with the callers to insure against discrepancy during the telephone interviews. Callers were encouraged during the orientation to request, from the investigator, clarification concerning any areas where uncertainty prevailed. The callers conducted mock interviews between themselves. Once the investigator was satisfied the callers were prepared final instructions were issued. The investigator stressed that the interview of the sheep

producers was to be as conversational as possible, thus not to appear to simply be reading from the survey instrument. It is important to note that the investigator stressed to the callers that they were representing OSU and that the purpose of this study must be explained to each sheep producer interviewed. Furthermore, that if the sheep producer wished not to respond to a particular question, the question was to be dismissed and the following question would then be asked. The investigator also stressed that the sheep producers were not to be pressured in any way to respond to any question they chose not to respond to. The investigator wanted to be certain only voluntary responses would be secured from the sheep producers who responded to the telephone interview.

When it was determined that an understanding of the interview instrument and the purpose and objectives of the study was satisfactorily acquired by the callers, then the actual telephone interviews were initiated. Sheep producers were first contacted on October 24, 1989. The hours established for calling were between 6:30 p.m. and 9:30 p.m. each Tuesday, Wednesday, and Thursday evening during a three week period.

Analysis of Data

The survey involved attitudes, opinions, and subjective judgments which resulted in qualitative data. The survey was also designed to quantify the responses given, which allowed the use of statistical procedures to aid in the interpretation of the data.

To determine the selected factors influencing lamb marketing preferences among sheep producers in Oklahoma as well as their production practice, it was necessary to interview specifically those producers who marketed lambs regardless of whether they raised sheep part or full-time and regardless of the number of sheep they raised. Therefore, the first question (question one on the survey instrument) was, "Do you raise sheep?" If the response was "no", the person was politely excused from further questioning and was not included as a respondent of the survey. A response of "yes" to question one qualified the sheep producer as an acceptable respondent. The respondent was then asked, "May we have a few minutes of your time to ask you a few questions?" (question two). If the response of the sheep producer to question two was "no", the sheep producer was included in the survey as a "non-respondent sheep producer." If the response was "yes", the sheep producer was included in the survey as a "responding sheep producer" and then asked the remaining questions on the survey instrument which applied directly to him/her.

It is important to note that it was left to the discretion of the respondents whether or not to respond to any or all of the questions asked by the callers. The respondents were not forced or pressured to respond to any particular question or questions. The responses were totally voluntary; therefore, the total number of respondents per question varied. This occurred because some respondents chose not to respond to certain questions. For example: some respondents volunteered a response when asked question 23,

"Would you mind sharing an estimate of your 1989 gross farm income?"

On the other hand, some respondents chose not to volunteer a response to question 23.

The demographic data (questions three to 13, 23 and 24) obtained consisted of the respondent's gender, age, ethnic group, level of formal education completed, location of residence (rural farm residence, rural non-farm residence, small town residence, or urban residence), numbers of years of residency in the county, type of involvement in agriculture, size of total farming operation, percentage of farming operation devoted to sheep production, number of years raising sheep, full or part-time involvement in raising sheep, gross farm income, and percentage of gross farm income derived from sheep.

Throughout the survey, the respondents were allowed one answer per question with the exception of question 16 which allowed a maximum of five responses and question 17 which requested a categorical ranking from one through seven.

The population of this study was a random sample of sheep producers who resided in Oklahoma and had access to telephone service. The information obtained from the telephone survey was classified as nominal and ordinal and therefore, utilized as discrete data.

The information collected from the survey instrument was processed through the OSU Computer Center and a Statistical Analysis System (SAS) copyrighted by SAS Institute, Inc., Cary, North Carolina, was utilized to perform the statistical computations.

Since the information collected from the survey was considered baseline data for future research studies, the investigator was interested in applying only descriptive statistics which included means, frequency distributions, percentages, and rank orders.

According to Bartz (2) descriptive statistics refers to the meaningful values which described the result of a particular behavior. Key (28) further added:

The primary use of descriptive statistics is to describe information or data through the use of numbers. The characteristics of groups of numbers representing information or data are called descriptive statistics (Section SL, p. 3).

As a further explanation of descriptive statistics, Bartz (2) stated, "Basically the frequency distribution is simply a table constructed to show how many times a given score or group of scores occurred" (p. 22).

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

The purpose of this study was to determine production practices and selected factors influencing lamb marketing preferences among sheep producers in Oklahoma.

In order to accomplish the purpose of this study, the following objectives were declared.

1. To determine the demographic factors describing sheep producers in Oklahoma.
2. To identify selected factors influencing marketing preferences among Oklahoma lamb producers.
3. To compare demographics among producers as to their preference of marketing lamb and their production practices.
4. To determine and prioritize marketing preferences among lamb producers in Oklahoma.

In addition, it describes base-line data for future research involvement within the Oklahoma sheep industry. Finally, it analyzes the data, presents and interprets the results.

Data collected in this study were from a random sample of sheep producers. The characteristics of the producers who responded to the telephone survey are reported in frequency distributions. In the second section of this chapter, the frequency distributions of

responses to each question pertaining to the respondent's sheep production operation. In the final section, frequency distributions of responses to each question pertaining to the respondent's sheep marketing practices will be presented.

Background of the Sample

The population of this study included 750 sheep producers residing within the state of Oklahoma, having access to telephone service and having their telephone numbers listed in a published telephone directory. These sheep producers were dispersed among 71 of Oklahoma's 77 counties (Figure 1). The 252 respondents which comprised 99.21 percent of the 254 sheep producers completed useable surveys. In addition, the findings revealed (Table XXI) that 60 producers did not market slaughter lambs.

Selected Characteristics of Respondents

The telephone survey instrument contained 13 questions designed to obtain personal information from each sheep producer concerning their residential location, age, level of education, ethnic group, involvement in agriculture, number of years raising sheep, occupational time devoted to raising sheep, gross farm income, and percentage of gross farm income derived from sheep production.

In Table I the (N) and percentage (%) of respondents by their residential county is presented. Of the 254 respondents, 34.67 percent were from nine counties. Six of these counties or 24.82 percent of the respondents were located in north central Oklahoma.

TABLE I
A DISTRIBUTION OF RESPONDENTS BY COUNTY

County	Frequency N = 254	Percent (%)
Adair	2	0.79
Alfalfa	6	2.36
Atoka	5	1.97
Beaver	5	1.97
Beckham	1	.39
Blaine	3	1.18
Bryan	3	1.18
Caddo	3	1.18
Canadian	3	1.18
Carter	1	0.39
Cherokee	2	0.79
Choctaw	1	0.39
Cimarron	2	0.79
Cleveland	1	0.39
Coal	1	0.39
Comanche	3	1.18
Cotton	2	0.79
Craig	2	0.79
Creek	3	1.18
Custer	7	2.76
Dewey	1	0.39
Ellis	6	2.36
Garfield	13	5.12
Garvin	5	1.97
Grady	8	3.15
Grant	9	3.55
Greer	1	0.39
Harper	2	0.79
Haskell	2	0.79
Hughes	3	1.18
Jackson	2	0.79
Jefferson	2	0.79
Johnston	2	0.79
Kay	16	6.30
Kingfisher	9	3.55
Kiowa	3	1.18
Latimer	2	0.79
Leflore	5	1.97
Lincoln	1	0.39
Logan	3	1.18
Love	1	0.39

TABLE I (Continued)

County	Frequency N = 254	Percent (%)
Major	2	0.79
Marshall	2	0.79
Mayes	1	0.39
McClain	1	0.39
McCurtain	1	0.39
Murray	3	1.18
Muskogee	9	3.55
Noble	8	3.15
Nowata	1	0.39
Okfuskee	3	1.18
Oklahoma	5	1.97
Okmulgee	2	0.79
Osage	5	1.97
Ottawa	1	0.39
Pawnee	8	3.15
Payne	5	1.97
Pittsburg	8	3.15
Pontotoc	3	1.18
Pottawatomie	2	0.79
Roger Mills	1	0.39
Rogers	2	0.79
Seminole	2	0.79
Sequoyah	4	1.57
Stephens	3	1.18
Texas	4	1.57
Tillman	3	1.18
Tulsa	1	0.39
Washita	3	1.18
Woods	2	0.79
Woodward	5	1.97
Non-respondents	<u>2</u>	<u>0.79</u>
Total	254	100.00

Respondents from two east central counties comprised 6.7 percent of the respondents, while one south central county claimed 3.15 percent of the respondents. The remaining 65.33 percent of the respondents were distributed throughout 62 Oklahoma Counties and has a percentage distribution of respondents ranging from 0.39 percent to 2.76 percent by county. Six counties had no respondents participating in the study (refer to Figure 1).

Presented in Table II is the distribution of respondents by gender. The largest percentage (76.77 percent) of the respondents was determined to be male and averaged 46.79 years of age. The 22.83 percent of the respondents found to be female averaged 37.83 years of age.

In Table III, the age categories of the sheep producers by number and percentage are presented. The largest percentage (14.96 percent) of the sheep producers was between 36 and 40 years of age. However, the categories including age from 36 to 55 were closely distributed and accounted for 52.76 percent of the respondents surveyed. Considerably less than one percent of the sheep producers surveyed were less than 15 years of age. Interestingly, 13.17 percent of the respondents were over 60 years of age. The average age of all respondents was determined to be 44.78 years.

In Table IV, the number and percentage of respondents by ethnic group is reported. Of the 254 respondents surveyed, 99.22 percent indicated Caucasian/white as the ethnic group to which they belonged. Less than one percent of the respondents were found to be Indian (American or Alaskan) and none of the respondents indicated

TABLE II
A DISTRIBUTION OF RESPONDENTS BY GENDER

Gender	*Average Age	Frequency N = 254	Percent (%)
Female	37.83	58	22.83
Male	46.79	195	76.77
Non-respondent	-----	1	0.40
Total		254	100.00

$\bar{X} = 44.78$

TABLE III
A DISTRIBUTION OF RESPONDENTS BY AGE

Age	Frequency N = 254	Percent (%)
10 years or less	-	----
11-15	2	.79
16-20	13	5.12
21-25	10	3.94
26-30	14	5.51
31-35	23	9.05
36-40	38	14.96
41-45	34	13.39
46-50	33	12.99
51-55	29	11.42
56-60	21	8.27
61-65	16	6.30
66-70	9	3.54
71-75	7	2.76
76-80	4	1.57
Non-respondent	1	.39
Total	254	100.00

$\bar{X} = 44.78$ years

TABLE IV
A DISTRIBUTION OF RESPONDENTS BY ETHNIC GROUP

Ethnic Group	Frequency N = 254	Percent (%)
Caucasian/White	252	99.22
Indian (American or Alaskan)	1	0.39
Black	---	-----
Hispanic	---	-----
Asian or Pacific Islander	---	-----
Other	---	-----
Non-respondent	1	0.39
Total	254	100.00

as being Black, Hispanic, or of Asian descent.

A distribution of respondents according to highest level of education attained is presented in Table V. Approximately one-third (33.47 percent) of the respondents were high school graduates. On the other hand, 3.54 percent indicated their highest level of education attainment was between the fourth and eighth grade. Furthermore, 5.91 percent revealed their level of educational attainment to be between the ninth and twelfth grade. College graduates possessing a Bachelor of Science (BS) degree totaled 24.41 percent, while 8.27 percent indicated a Master of Science (MS) degree had been earned. Another 17.33 percent of those respondents surveyed had attended college. This ranged from one semester through three years.

Presented in Table VI is the distribution of respondents by location of residency. The largest percentage (84.65) of the sheep respondents classified their residency as rural farm. Another 4.73 percent listed residency as rural non-farm, while 10.24 percent of the respondents resided in small towns. No respondent surveyed indicated an urban residency. In addition, Table VI characterized 154 (60.63 percent) of the rural farm respondents as being involved in production agriculture. Another 6.30 percent of rural farm respondents were involved in agricultural related occupations, while 4.72 percent were involved in 4-H and FFA. Fifteen (5.91 percent) of the respondents who resided in small towns named production agriculture as their occupation.

TABLE V
A DISTRIBUTION OF RESPONDENTS BY HIGHEST LEVEL
OF FORMAL EDUCATION

Level of Education	Frequency N = 254	Percent (%)
High School Graduates	85	33.47
Vo-Tech	7	2.76
B. S. Degree	62	24.41
Other:		
M. S. Degree	21	8.27
Doctorate Degree	3	1.18
Post Graduate College	1	0.39
B. A. Degree	1	0.39
Associate Degree	3	1.18
Administrative Certificate (Ed.S.)	1	0.39
Veterinary School	1	0.39
Attended College	44	17.33
4th-8th Grade	9	3.54
9th-12th Grade	15	5.91
Non-respondent	1	0.39
Total	254	100.00

TABLE VI
A DISTRIBUTION OF RESPONDENTS BY LOCATION OF RESIDENCY

Location of Residence	Respondents											
	Production		Ag Business		4-H		FFA		Other		Total	
	Agriculture		Persons		Members		Members		Members		N = 254	
	n	%	n	%	n	%	n	%	n	%	n	%
Rural Farm	154	60.63	16	6.30	4	1.57	8	3.15	33	12.99	215	84.64
Rural Non-Farm	2	0.79	2	0.79	1	0.39	-	--	7	2.76	12	4.73
Small Town	15	5.91	5	1.97	-	--	-	--	6	2.36	26	10.24
Urban											--	--
Non-respondent									1	0.39	1	0.39
Total	171	67.33	23	9.06	5	1.96	8	3.15	47	18.50	254	100.00

The number and percentage of respondents according to years of residency within a county is provided in Table VII. One hundred twenty-nine of the respondents (50.79 percent) indicated they had resided within their respective county for 31 or more years. The next largest percentage (12.60 percent) of the respondents based on years of county residency was the 16 to 20 year category. The smallest percentage (3.54 percent) of the respondents had lived within their respective county between 26 and 30 years. One-fourth of the respondents (25.59 percent) had lived within their respective county less than 16 years.

In Table VIII, frequency distribution of respondents according to type of involvement in agriculture is presented. Production agriculture was reported by 172 of the respondents (67.73 percent) as the largest category concerning involvement in agriculture. Agriculture related business comprised 9.08 percent of the occupational involvement of sheep producers. Of the 254 sheep producers surveyed, five (1.97 percent) listed 4-H membership as type of involvement while another eight respondents (3.15 percent) acknowledged FFA membership. These four categories accounted for 81.93 percent of the involvement in agriculture by respondents surveyed. The remaining 18.07 percent of the respondents was dispersed among some 18 occupations.

When asked whether they raised sheep full-time or part-time, 150 of the respondents (59.06 percent) indicated they raised sheep full-time and 101 of the respondents (39.76 percent) indicated they raised sheep part-time (See Table IX).

TABLE VII
A DISTRIBUTION OF RESPONDENTS BY YEARS
OF RESIDENCE IN COUNTY

Years Residency	Frequency N=254	Percent %
1 - 5	17	6.69
6 - 10	25	9.84
11 - 15	23	9.06
16 - 20	32	12.60
21 - 25	18	7.09
26 - 30	9	3.54
31 or more	129	50.79
Non-respondent	1	0.39
Total	<u>254</u>	<u>100.00</u>

TABLE VIII

A DISTRIBUTION OF RESPONDENTS BY TYPE OF
INVOLVEMENT IN AGRICULTURE

Type Involvement in Agriculture	Frequency N=254	Percent %
Production	172	67.73
Ag Related Business	23	9.08
4-H Member	5	1.97
FFA Members	8	3.15
Other:		
Homemaker	1	0.39
4-H Parent/Leader	2	0.79
Custodian	1	0.39
City Maintenance Foreman	1	0.39
Pawn Shop Owner/Jeweler	2	0.79
Industrial Employees	4	1.57
Insurance Agent	1	0.39
Barber/Carpenter/Contractor/ Mechanic	4	1.57
Sheperd/Sheep Rancher	1	0.39
College Instructor/Staff Memer	2	0.79
Teacher/Retired Educator	4	1.57
School Administrator	1	0.39
Public Health Administrator	1	0.39
Industry Safety Supervisor	1	0.39
Farm Management Business Instructor/Vo-Tech	1	0.39
Hobby	12	4.73
Retired/Hobby	3	1.18
Raise Sheep/Home Consumption	1	0.39
Non-respondents	3	1.18
Total	254	100.00

TABLE IX
A DISTRIBUTION OF RESPONDENTS BY
STATUS OF SHEEP OPERATION

Status of Sheep Operation	Frequency N=254	Percent %
Full-Time	150	59.06
Part-Time	101	39.76
Non-respondents	3	1.18
Total	<u>254</u>	<u>100.00</u>

In Table X, the number and percentage of respondents in each level pertaining to the number of years experience they had in raising sheep is presented. One hundred forty-nine of the respondents (58.66 percent) indicated they had 10 years or less experience raising sheep. Fifty-three of the respondents (20.86 percent) had between 11 and 20 years experience. Two hundred and two of the respondents or 79.52 percent of those surveyed revealed less than 20 years experience in raising sheep. Furthermore, less than 11 percent of the respondents surveyed had 31 or more years experience in raising sheep.

The frequency distribution of the size of farming operation (in acres), as reported by the respondents, is presented in Table XI. Farming operations of 25 acres or less were reported by 44 of the respondents (17.33 percent) and eight respondents (3.15 percent) indicated they farmed over 5,000 acres. Approximately one-third (33.86 percent) of the farming operations reported by respondents were less than 100 acres in size. The categories ranging in size from 101 acres to 2000 acres were closely distributed and accounted for 57.08 percent of the sheep producers surveyed.

In Table XII, the number and percentage of respondents according to the percentage of land from the farming operation devoted to sheep production is presented. The largest percentage (32.29 percent) of the respondents indicated that 76 to 100 percent of the land in their farming operation was devoted to sheep production. On the other hand 4.33 percent of the respondents reported that 51 to 75 percent of the land in their farming

TABLE X
A DISTRIBUTION OF RESPONDENTS BY NUMBER OF
YEARS EXPERIENCE IN RAISING SHEEP

Experience (Years Raising Sheep)	Frequency N=254	Percent %
0 - 10	149	58.66
11 - 20	53	20.86
21 - 30	23	9.06
31 - 40	16	6.30
41 - 50	6	2.36
51 - 60	3	1.18
61 years and over	2	.79
Non-respondents	2	.79
Total	<u>254</u>	<u>100.00</u>

TABLE XI
A DISTRIBUTION OF RESPONDENTS BY SIZE
OF FARMING OPERATION

Size of Farming Operation	Frequency N=254	Percent %
25 acres or less	44	17.33
26 - 50 acres	25	9.84
51 - 100 acres	17	6.69
101 - 160 acres	28	11.02
161 - 320 acres	28	11.02
321 - 640 acres	35	13.78
641 -1000 acres	27	10.63
1001-2000 acres	27	10.63
2001-3000 acres	6	2.36
3001-5000 acres	7	2.76
> 5000 acres	8	3.15
Non Respondents	2	0.79
Total	<u>254</u>	<u>100.00</u>

TABLE XII

A SUMMARY OF FARM OPERATIONS BY PERCENTAGE OF
LAND DEVOTED TO SHEEP PRODUCTION

Percentage of Acres for Sheep Production	Frequency N=254	Percent %
10% or less	65	25.59
11 - 25 %	56	22.05
26 - 50 %	36	14.17
51 - 75 %	11	4.33
76 -100 %	82	32.29
Non-respondents	4	1.57
Total	254	100.00

operation was devoted to sheep production. Sixty-five of the respondents or 25.59 percent devoted ten percent or less of the land in their farming operation to sheep production, while 47.59 percent of the respondents indicated 25 percent or less of the land in their farming operation was devoted to sheep production.

In Table XIII, the number and percentage of respondents in each level of gross farm income is presented. Of the 254 sheep producers surveyed, 85 or 33.46 percent of the respondents, elected not to reveal their gross farm incomes. The largest number of respondents, 35 or 13.78 percent, indicated gross farm income of \$2501 to \$10,000 while the smallest number of respondents, 11 or 4.33 percent, had gross farm incomes ranging from \$20,001 to \$25,000. Furthermore, 11.02 percent of the respondents reported gross farm incomes in excess of \$100,000.

The number and percentages of respondents according to the percentage of gross farm income derived from sheep production is presented in Table XIV. Fifty-nine of the 254 respondents (23.23 percent) chose not to reveal information concerning their gross farm income. Sixty-one respondents (24.02 percent) indicated that 76 to 100 percent of their gross farm income was attributable to sheep production. The smallest percentage of respondents (3.15 percent) revealed that sheep production was responsible for between 51 to 75 percent of their gross farm income. Fifty respondents (19.68 percent) reported that sheep production was responsible for ten percent or less of their gross farm income.

TABLE XIII
A DISTRIBUTION OF SHEEP PRODUCERS
BY GROSS FARM INCOME

Gross Farm Income	Frequency N=254	Percent %
\$2500 or less	29	11.42
\$2501 - \$ 10,000	35	13.78
\$10,001 - \$ 20,000	21	8.27
\$20,001 - \$ 25,000	11	4.33
\$25,001 - \$ 50,000	21	8.27
\$50,001 - \$100,000	24	9.45
> \$100,000	28	11.02
Non-respondents	85	33.46
Total	<u>254</u>	<u>100.00</u>

TABLE XIV
 A SUMMARY OF RESPONDENTS GROSS FARM INCOME
 BY PERCENTAGE DERIVED FROM
 SHEEP PRODUCTION

Percentage Income from Sheep Production	Frequency N=254	Percent %
10% or less	50	19.68
11 - 25 %	41	16.14
26 - 50 %	35	13.78
51 - 75 %	8	3.15
76 - 100 %	61	24.02
Non-respondents	59	23.33
Total	<u>254</u>	<u>100.00</u>

Responses to Questions Pertaining to
Sheep Production Operation

When asked to declare the type of sheep operation they had, 118 respondents or 46.46 percent reported they were involved in a commercial sheep operation (See Table XV). Another 77 respondents or 30.31 percent, had purebred/show lamb operations. Only 9.45 percent of the respondents surveyed said they were purebred operators not involved with show lambs.

Presented in Table XVI is the summary of sheep operations by season of lambing. The largest percentage of respondents (48.43 percent) revealed that spring lambing dominated their sheep operations. However, another 33.46 percent of the respondents indicated that both spring and fall lambing occurred in their operations. The smallest percentage of respondents (16.14 percent) only lambed in the fall.

Responses to Questions Pertaining
to Sheep Marketing Practices

In Table XVII a summary of sheep currently on Oklahoma farms by marketing category is reported. During December 1989, 61.56 percent or 8,088 head of feeder lambs were reported by the respondents surveyed. The next largest category was slaughter lambs which accounted for 31.08 percent (4,083 head) of the sheep on farms. Exhibition sheep comprised 4.80 percent of the sheep, while sheep for wool production were reported at 2.56 percent.

TABLE XV
A SUMMARY OF SHEEP OPERATIONS
BY CLASSIFICATION

Classification of Sheep Operation	Frequency N=254	Percent %
Commercial	118	46.46
Purebred	24	9.45
Commercial/Purebred	33	12.99
Purebred/Show Lamb	77	30.31
Non-respondents	2	0.79
	<u>254</u>	<u>100.00</u>

TABLE XVI
A SUMMARY OF SHEEP OPERATIONS
BY LAMBING SEASON

Lambing Season	Frequency N=254	Percent %
Spring	123	48.43
Fall	41	16.14
Spring and Fall	85	33.46
Non-respondents	5	1.97
	<u>254</u>	<u>100.00</u>

TABLE XVII
A SUMMARY OF SHEEP NUMBERS CURRENTLY ON
FARMS BY MARKETING CATEGORY

Marketing Category	Frequency N=13,138	Percent %
Breeding Stock	-	-
Feeder Lambs	8,088	61.56
Slaughter Lambs	4,083	31.08
Exhibition Sheep	630	4.80
Wool Production	337	2.56
Total	<u>13,138</u>	<u>100.00</u>

Presented in Table XVIII is the summary of ranking by marketing category for the respondents surveyed. When asked to rank how sheep were marketed, 110 of the respondents (43.80 percent) preferred to market their sheep as slaughter lambs. Sixty-four respondents or 25.6 percent ranked show lamb sales as the preferred marketing category. The next group of respondents, 53 (21.5 percent) preferred to market their sheep as feeder lambs.

Table XIX presents a summary of the distribution of slaughter lambs marketed annually by Oklahoma sheep producers. Interestingly, 116 of the respondents (45.66 percent) surveyed indicated they marketed 25 head or less of slaughter lambs annually. Of this 45.66 percent, 21.65 percent sold no slaughter lambs. Thirty-seven respondents (14.57 percent) indicated they sold between 51 and 100 head of slaughter lambs annually, while 13.78 percent reported selling between 101 and 250 head annually. Ten respondents (3.94 percent) said they sold between 501 and 1,000 head of slaughter lambs annually and just under two percent of the respondents surveyed reported marketing over 1,000 head.

When asked to indicate the weight at which slaughter lambs were marketed, only five respondents (1.97 percent) reported selling at weights greater than 125 pounds (See Table XX). The weight range from 106 to 115 pounds was popular among 33.46 percent of the respondents and 31.10 percent sold at weight of 105 pounds or less.

In Table XXI, the number and percentages for lamb producers according to the basis utilized to market slaughter lambs is summarized. The largest percentage (68.51 percent) of lamb

TABLE XVIII

A SUMMARY OF RANKINGS BY MARKETING CATEGORY

Ranking Categories	Breeding Ewes		Breeding Rams		Stocker Sheep		Feeder Lambs		Slaughter Lambs		Show Lambs		Other		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N	%
First	19	7.6	1	0.4	--	----	53	21.50	110	43.8	64	25.6	4	1.6	251	98.92
Second	49	19.6	11	4.4	32	13.0	34	13.8	46	18.3	25	10.0	2	0.8	199	78.35
Third	24	9.6	19	7.6	22	8.9	11	4.5	21	8.4	18	7.2	--	---	115	45.27
Fourth	3	1.6	23	9.2	11	4.5	6	2.4	15	6.0	2	0.8	--	---	60	23.62
Fifth	--	----	4	1.6	11	4.5	4	1.6	1	0.4	1	0.4	--	---	22	8.66
Sixth	1	0.4	4	1.6	2	0.8	2	0.8	1	0.4	--	----	1	0.4	11	4.33
Seventh	--	----	--	---	1	0.4	1	0.4	--	----	1	0.4	--	---	3	1.18

*Frequencies of respondents not selecting a ranking for marketing categories ranged from 57 to 242.

TABLE XIX
 A SUMMARY OF SLAUGHTER LAMBS MARKETED ANNUALLY
 BY OKLAHOMA SHEEP PRODUCERS BY
 FREQUENCY CATEGORY

Number Slaughter Lambs Marketed	<u>Producers</u> N (254)	Percent %
None	55	21.65
25 head or less	61	24.01
26 - 50 Head	38	14.96
51 - 75 Head	18	7.09
76 - 100 Head	19	7.48
101 - 250 Head	35	13.78
251 - 500 Head	11	4.33
501 - 1000 Head	10	3.94
1001 - 3000 Head	5	1.97
Non-respondents	2	0.79
Total	254	100.00

TABLE XX
A DISTRIBUTION OF LAMB PRODUCERS MARKETING LAMB
BY WEIGHT CATEGORIES

Weight Category	Frequency N=254	Percent %
95 pounds or less	30	11.81
96 - 105 Pounds	49	19.29
106 - 115 Pounds	85	33.46
116 - 125 Pounds	27	10.63
125 pounds or more	5	1.97
Non-respondents	58	22.84
	<u>254</u>	<u>100.00</u>

TABLE XXI
A SUMMARY OF LAMB PRODUCERS MARKETING
LAMBS ON A SLAUGHTER BASIS

Basis	Frequency N=254	Percent %
Live Weight/Standard Shrink	174	68.51
Live Weight/Overnight Shrink	11	4.33
Carcass Weight	1	0.39
Grade and Yield	1	0.39
Other:		
Scale Weight	5	1.97
Dollars/Head	1	0.39
Delivered To Locker	1	0.39
Non-respondents	60	23.63
Total	254	100.00

producers sold on a live weight with standard shrink basis. Eleven respondents (4.33 percent) indicated use of the live weight with overnight shrink as the basis for marketing slaughter lambs. Marketing slaughter lambs on the basis of carcass weight or grade and yield was essentially nonexistent.

To report the marketing methods utilized by slaughter lamb producers, Table XXII presents the number and percentage of the responses elicited from the respondents. Sixty-nine of the respondents (27.17 percent) revealed that the local auction was the method employed to dispose of slaughter lambs. When combined with the terminal auction method the percentage increased to 38.59 percent. Computer and teleauction were the marketing methods of choice by 20.87 percent of the respondents. Just under 12 percent of those respondents surveyed indicated they use private treaty sales, while another 5.12 percent revealed their marketing method of choice was direct to the packer.

Table XXIII presents a summary of producer marketing preferences by factors of influence. Ninety-two of the respondents (36.24 percent) revealed that convenience was the most highly weighted factor which influenced their choice of marketing method. Another 66 of the respondents (25.99 percent) surveyed indicated the price per cwt received for slaughter lambs was the determining factor influencing the marketing method they selected. These two factors accounted for 62.23 percent of the elicited responses.

TABLE XXII
A DISTRIBUTION OF SLAUGHTER LAMB PRODUCERS
BY MARKETING METHODS

Marketing Methods	Frequency N=254	Percent %
Private Treaty	30	11.81
Direct to Packer	13	5.12
Local Auction	69	27.17
Terminal Auction	29	11.42
Computer Auction	21	8.27
Teleauction	32	12.60
Video Auction	-	----
Consignment Sale	1	0.39
Other:		
Feedlot	1	0.39
Non-resondents	58	22.83
Total	254	100.00

TABLE XXIII
A SUMMARY OF PRODUCER MARKETING PREFERENCES
BY FACTORS OF INFLUENCE

Factors of Influence	Frequency N=254	Percent %
Standard Shrink	1	0.39
Convenience	92	36.24
Grade and Yield	1	0.39
Price/Cwt	66	25.99
Carcass Basis	-	----
Reputation of Organization	9	3.54
Commission Charge	10	3.95
Other:		
Direct to Buyer/Eliminate Middleman	2	0.79
More Dollars/Head	1	0.39
Only Market Outlet	4	1.57
Non-Profit Cooperative Effort	2	0.79
Small Business Atmosphere	1	0.39
Paid at Delivery	1	0.39
Negative Experience with Teleauction	1	0.39
Negative Reputation/Local Auction	1	0.39
Weight	1	0.39
Demand for Product	1	0.39
Personal Preference	1	0.39
Other Producers	1	0.39
Non-respondents	58	22.84
Total	254	100.00

Reputation of marketing organization and commission charges accounted for 3.54 percent and 3.95 percent of the respondents surveyed, respectively.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The intent of this chapter was to present concise summaries of the following topics: purpose of the study, objectives of the study, design of the study, and major findings of the research. Through a detailed inspection of these topics, conclusions and recommendations were presented based on the analysis of data.

Purpose of the Study

The purpose of this study was to determine production practices and selected factors influencing lamb marketing preferences among sheep producers in Oklahoma.

Objectives of the Study

In order to accomplish the purpose of this study, the following objectives were declared:

1. To determine the demographic factors describing sheep producers in Oklahoma.
2. To identify selected factors influencing marketing preferences among Oklahoma lamb producers.

3. To compare demographics among producers as to their preference of marketing lamb and their production practices.

4. To determine and prioritize marketing preferences among lamb producers in Oklahoma.

Rationale of the Study

When marketing options are few and resulting competition for a commodity is limited, producers ultimately are penalized for their effort. Demand for American lamb has remained ahead of the industry's capacity to meet demand. Consequently, lamb producers have been recipients of reasonable lamb prices which have translated into profitability in most years. Currently, lamb producers are experiencing the lowest lamb prices in many years and the concern exists within the industry that these prices may reach 16 year lows. Needless to say, lack of competition in the market place and low lamb prices are causing devastation to Oklahoma's sheep industry. The future success of the sheep industry in Oklahoma will largely be determined by market stability and healthy competition among markets.

Planned marketing will be essential for producer survival. Producers must become knowledgeable as to availability of alternative methods of lamb marketing.

Oklahoma State University has always been at the forefront with assisting producers effect change that would help improve their way of life. Once again, OSU has a role in providing the Oklahoma agricultural community knowledge that has the potential to effect

positive change, thus contributing to improvement within the sheep industry. Findings from this research study should provide discernment into lamb marketing alternatives within Oklahoma and provide lamb producers commensurate information from which to synthesize appropriate marketing strategies for their particular situation.

Design of the Study

Following a review of literature and research indirectly and/or directly related to the study, procedures were established to satisfy the purpose of the study.

The population for this study was derived from the list of names, mailing addresses, and/or telephone numbers of Oklahoma sheep producers receiving the Sheep Update newsletter published by the OSU Animal Science Department and the Oklahoma Cooperative Extension Service. The list of information concerning sheep producers receiving the newsletter was provided by Dr. Gerald Fitch and the late Sid Ercanbrack.

The total number of Oklahoma sheep producers whose names appeared on the mailing list was 750. A method for selecting a sample size was obtained and a representative sample of 254 sheep producers was considered necessary to insure the .95 confidence interval needed. The total sample size (254) was randomly selected and the resulting respondents surveyed represented 71 of Oklahoma's 77 counties.

The data collected for this study were collected using a telephone survey-interview. The interview schedule developed contained a total of 24 individual questions. The first question was asked to determine if the person raised sheep and the second question was asked (once the person was determined to be a sheep producer) to elicit the sheep producer's cooperation in responding to the questionnaire. The remaining 22 questions were separated into three separate sections as follows: 14 questions were designed to obtain personal information (demographic data); two questions were designed to obtain information pertaining specifically to the respondents' sheep production phase; and seven questions designed to obtain information related to the sheep producers lamb marketing program.

The telephone survey was conducted during a three-week period in October, 1989. Two hundred fifty-two (99.21 percent) sheep producers cooperated and provided responses to the survey.

The information collected from the survey instrument was processed through the OSU computer laboratory and a Statistical Analysis System (SAS) program was used in calculating the frequency distributions (numbers and percentages) of the data.

Major Findings of the Study

The major findings of this study were divided into three sections. They were as follows:

1. Selected characteristics of respondents.
2. Responses to questions pertaining to sheep production.
3. Responses to questions pertaining to lamb marketing.

Selected Characteristics of Respondents

Selected characteristics of respondents in this study indicated a large majority of the respondents were white males whose residences were located on rural farms. A summary of the selected characteristics of respondents is presented in Table XXIV.

Ages of the respondents revealed that the smallest group responding to the survey was less than 16 years of age. The next smallest group of respondents were between 76 to 80 years of age. More than 41 percent of the respondents were between 36 to 50 years of age.

When respondents were asked to indicate level of education completed, more than 33 percent stated high school graduate while another 24 percent possessed B.S. degrees. However, the largest group of respondents (99 or 38.97 percent) selected the "other" category when asked about level of education. This category included completion of fourth grade and having M.S. and Doctorate degrees.

The largest group of respondents (nearly 68 percent) indicated they were involved in production agriculture. Just over five percent of the respondents revealed their agriculture involvement was through 4-H or FFA membership.

TABLE XXIV

SUMMARY OF THE SELECTED CHARACTERISTICS OF RESPONDENTS

Characteristics	<u>Frequency</u> N=254	Percent %
Gender:		
Male	195	76.77
Female	58	22.83
Non-Respondent	1	0.39
Age:		
20 years or less	15	5.91
21 - 35 years	47	18.50
36 - 50 years	105	41.34
51 - 65 years	66	25.98
66 - 80 years	20	7.87
Non-Respondent	1	0.40
Ethnic Group:		
Caucasian/White	252	99.22
Indian (American/Alaskan)	1	0.39
Non-Respondent	1	0.39
Level of Education:		
High School Graduate	85	33.47
Vo-Tech	7	2.76
Bachelor of Science Degree	62	24.41
Other	99	38.97
Non-Respondent	1	0.39
Residence:		
Rural Farm	215	84.64
Rural Non-Farm	12	4.73
Small Town	26	10.24
Non-Respondent	1	0.39
Years of Residence in County:		
10 years or less	42	16.54
11 - 20 years	55	21.65
21 - 30 years	27	10.63
More than 30 years	129	50.79
Non-Respondent	1	0.39

TABLE XXIV (Continued)

Characteristics	<u>Frequency</u> N=254	Percent %
Type of Involvement in Agriculture:		
Production	172	67.77
Ag Related Business	23	9.06
4-H/FFA	13	5.12
Other	45	17.91
Non-Respondent	1	0.39
Size of Farming Operation:		
25 acres or less	44	17.32
26 - 160 acres	70	27.56
161 - 640 acres	63	24.80
641 - 2000 acres	54	21.26
2001 - 5000 acres	13	5.12
>5000 acres	8	2.79
Non-Respondent	2	0.79
Number Year Raising Sheep:		
10 years or less	149	58.66
11 - 30 years	76	29.90
31 - 50 years	22	8.66
More than 50 years	5	1.97
Non-Respondents	2	0.79
Status of Sheep Operation:		
Full-time	150	59.06
Part-time	101	39.76
Non-Respondent	3	1.18
Gross Farm Income:		
No response	81	31.89
\$20,000 or less	85	33.46
\$20,001 - \$50,000	32	12.61
\$50,001 - \$100,000	24	9.45
More than \$100,000	28	11.02
Non-Respondents	4	1.57
Gross Farm Income from Sheep:		
No Response	57	22.44
25% or less	91	35.82
26% - 75%	43	16.93
More than 75%	61	24.02
Non-Respondents	2	0.79

The sheep producers were asked to indicate the number of acres in their farming operation. The responses elicited ranged from 25 acres or less to more than 5,000 acres. The largest group of respondents (70 or 27.56 percent) farmed between 26 to 160 acres. The smallest group of respondents (8 or 3.15 percent) farmed more than 5,000 acres. Another 44 respondents (17.32 percent) farmed 25 acres or less.

Of the respondents, 149 (nearly 59 percent) had been raising sheep for 10 years or less while almost two percent of the respondents had raised sheep for more than 50 years.

Full-time sheep producers constituted the majority (59.06 percent) of the respondents.

The range of responses elicited from respondents when they were asked to indicate their gross farm income was from \$2500 or less to more than \$100,000 per year. The smallest group of respondents (24 or 9.45 percent) indicated their estimated gross farm income was between \$50,001 to \$100,000. Twenty-eight of the respondents (11.02 percent) indicated their gross farm income was over \$100,000 per year. The largest group of respondents (85 or 33.46 percent) revealed a gross farm income of \$20,000 or less per year. Another 85 respondents (33.46 percent) elected to not answer the question about gross farm income.

Sheep producers were also asked to estimate the percentage of their gross farm income that was derived from their sheep operation. Fifty-nine of the respondents (23.23 percent) preferred to not answer this question. The largest group of respondents (91 or 35.82

percent) indicated that 25 percent or less of their gross farm income was procured from their sheep operation. Another 61 of the respondents (24.02 percent) revealed that the sheep operation was responsible for more than 75 percent of their gross farm income.

Responses to Questions Pertaining
to Sheep Production

A summary of the responses to questions pertaining to sheep production is presented in Table XXV.

The sheep producers were asked to estimate the percentage of their total land (in acres) devoted to their sheep operation. The largest group of respondents (82 or 32.29 percent) indicated between 76 to 100 percent of their total land was devoted to the sheep operation. The smallest group of respondents (47 or 18.50 percent) reported that from 26 to 75 percent of their land was devoted to their sheep operation. Over 25 percent of the respondents revealed that ten percent or less of their total land was involved in their sheep operation.

When asked to relate the type of sheep operation they were involved with, 118 of the respondents (46.46 percent) stated they had a commercial sheep operation. Another 30 percent of the respondents indicated they were associated with a purebred/show lamb operation. The smallest group of respondents (24 or 9.45 percent) revealed they were involved in the purebred sheep business.

The respondents were asked to identify the season in which they lambled. Spring lambing season was the choice of 123 of the

TABLE XXV
 SUMMARY OF RESPONSES TO QUESTIONS PERTAINING
 TO SHEEP PRODUCTION

Sheep Production Related Questions	<u>Frequency</u> N=254	Percent %
Percent of total acres devoted to sheep:		
10% or less	65	25.94
11% - 25%	56	22.05
26% - 75%	47	18.50
76% - 100%	82	32.29
Non-Respondents	4	1.57
Classification of sheep operation:		
Commercial	118	46.46
Purebred	24	9.45
Commerical/Purebred	33	12.99
Purebred/Show lamb	77	30.31
Non-Respondents	2	0.79
Sheep operation by lambing season:		
Spring	123	48.43
Fall	41	16.41
Spring and Fall	85	33.46
Non-Respondents	5	1.97

respondents (48.43 percent) while another one-third of the respondents indicated they lambled in both spring and fall. The smallest group of respondents (41 or 16.14 percent) indicated they lambled only in the fall.

Responses to Questions Pertaining
to Lamb Marketing

A summary of responses to questions pertaining to lamb marketing is presented in Table XXVI.

The sheep producers were asked to estimate the number of sheep currently on their farm according to marketing category. The vast majority of sheep currently on farms were reported to be feeder lambs (8,088 head or 61.56 percent). The next highest inventory of sheep on farms were slaughter lambs (4,083 head or 31.08 percent). Exhibition sheep were estimated at 630 head (4.80 percent) and the smallest category reported was sheep for wool production (337 head and 2.56 percent).

The range of responses elicited from respondents when they were asked to indicate the number of slaughter lambs they marketed annually ranged from none to 3,000 head. The largest group of respondents (99 or 38.97 percent) indicated they marketed 50 head or less. The smallest group of respondents (15 or 5.91 percent) revealed they marketed between 501 and 3,000 head of slaughter lambs. Approximately 22 percent of the respondents indicated they did not market slaughter lambs.

TABLE XXVI
SUMMARY OF RESPONSES TO QUESTIONS PERTAINING
TO LAMB MARKETING

Lamb Marketing Related Questions	<u>Frequency</u> N=13,138	Percent %
Sheep Numbers Currently on Farm:		
Feeder lambs	8,088	61.56
Slaughter lambs	4,083	31.08
Exhibition sheep	630	4.80
Wool production	337	2.56
*N =	13,138	100.00
Number of Slaughter Lambs Marketed by Producers:		
None	55	21.65
50 head or less	99	38.97
51 - 100 head	37	14.57
101 - 500 head	46	18.11
501 - 3,000 head	15	5.91
Non-Respondents	2	0.79
Lamb Producers Marketing by Weight Categories:		
95 pounds or less	30	11.81
96 - 105 pounds	49	19.29
106 - 115 pounds	85	33.46
116 - 125 pounds	27	10.63
More than 125 pounds	5	1.97
Non-Respondents	58	22.84
Lamb Producers Marketing on Slaughter Basis:		
Live weight/standard shrink	174	68.51
Live weight/overnight shrink	11	4.33
Carcass weight	1	0.39
Grade and yield	1	0.39
Other	9	3.54
Non-Respondents	58	22.84

TABLE XXVI (Continued)

Sheep Production Related Questions	<u>Frequency</u> N=254	Percent %
Factors Influencing Marketing Preference:		
Standard shrink	1	0.39
Convenience	92	36.24
Grade and yield	1	0.39
Carcass Basis	0	0.00
Price/CWT	66	25.98
Other	36	14.17
Non-Respondents	58	22.83

When asked to indicate the weight category at which slaughter lambs were marketed, the largest group of respondents (85 or 33.46 percent) marketed slaughter lambs between 106 to 115 pounds. The smallest group of respondents (5 or 1.97 percent) indicated they marketed lambs weighing more than 125 pounds. Thirty respondents (nearly 12 percent) marketed lambs weighing less than 95 pounds. Again, 58 respondents (22.84 percent) did not market slaughter lambs.

A large majority of lamb producers (174 or 68.51 percent) selected live weight with standard shrink as the basis of choice when marketing slaughter lambs. Only two respondents (.79 percent) indicated they marketed slaughter lambs on either a carcass weight or grade and yield basis.

Sixty-nine respondents (27.16 percent) reported they marketed slaughter lambs through local auctions. Another 53 respondents (20.86 percent) indicated they preferred to market slaughter lambs utilizing electronic marketing methods. The smallest group of respondents (13 or 5.12 percent) revealed they sold directly to the packer.

When asked about factors influencing their marketing preference, over 36 percent of the respondents indicated convenience as the most important factor. Nearly 26 percent of the respondents selected price/Cwt. as the most important factor influencing their marketing preference. Standard shrink, grade and yield and carcass basis were determined to have no influence on respondents' marketing preference.

Conclusions

The analysis of data and subsequent findings were the basis for the following conclusions.

1. As a result of the findings, it was concluded that sheep producers in Oklahoma were typically white, male from 36 to 56 years of age, residing on the farm in the same county for more than 30 years, and whose agricultural involvement was production agriculture. It was further concluded that sheep producers in Oklahoma have had a rather short tenure in the sheep industry. Basically, sheep producers in Oklahoma produce sheep for meat rather than wool.

2. It was apparent that a rather small percentage of the total farming operation was devoted to sheep production by Oklahoma sheep producers.

3. It was concluded that generally speaking, sheep operations in Oklahoma can be identified as being representative of four producer groups.

4. It was apparent from the data that sheep producers in Oklahoma schedule spring lambing.

5. It was apparent from the findings that the timing of the survey influenced the classification of sheep inventoried. However, at the time the survey was conducted, the sheep inventoried were predominantly feeder lambs.

6. It was evident from the findings that Oklahoma producers generally market slaughter lambs in small groups.

7. The lack of sheep numbers and spring lambing schedule seem to be barriers in developing a competitive market environment for Oklahoma producers.

8. It was concluded from the findings regarding the choices that producers made about marketing preferences that many lacked an awareness of marketing options and price determinations.

9. It was apparent from the findings that a slaughter lamb in Oklahoma can be defined by weight range as one weighing between 95 and 115 pounds.

10. After reviewing the findings, it was concluded that convenience was an influential factor among sheep producers in selecting a marketing preference. However, it was further concluded that electronic marketing systems are getting a favorable review from Oklahoma sheep producers.

11. It was apparent that the factors of time and location could not be combined with convenience for some producers in selecting a marketing preference.

12. As a final conclusion, it was apparent from the findings concerning the respondents' characteristics and the management practices currently being conducted that many sheep producers are not aware of the marketing options and management schemes available.

Recommendations

As a result of the conclusions drawn from the analysis and interpretation of data, the following recommendations were made.

1. Since Oklahoma's sheep producing population is relatively young and inexperienced with regard to tenure in the industry, it was recommended that the Cooperative Extension Service and the Agriculture Division of the State Department of Vocational and Technical Education develop progressive educational and marketing programs to meet the needs of present and future sheep producers.

2. As a result of the findings and conclusions, it was evident that producer groups in Oklahoma should combine their resources and efforts to improve and promote the sheep industry within the state.

3. Considering that most sheep operations in Oklahoma are small scale, it is essential that research and extension programs focus on conducting a needs assessment among producers to determine marketing and management needs and priorities.

4. As a result of the findings and conclusions, it was apparent that many sheep producers were not aware of all marketing options available and that producer groups should develop educational and public relations programs that publicize the options available to producers.

5. As a result of observable evidence of small grain pasture availability and market strength during the spring, commercial producers should be made aware of the options and opportunities afforded by fall lambing.

6. As a result of the findings and conclusions, it was recommended that marketing firms, producer associations, and livestock reporting services work together to make producers more aware of possible marketing options and the dependability of

management with regard to convenience, time, location, and price afforded by said market.

Recommendations for Further Research

The following recommendations were made in regard to additional research. The judgments were based on having conducted the study and on the examinations of the findings of the study.

1. Further research should be conducted to analyze the current marketing problems and develop solutions that are conducive to competitive markets.

2. Specific research should be conducted to determine who belongs to sheep producer and marketing associations and the perceived benefits of doing so.

3. Conduct a study to evaluate the economic feasibility and impact of a producer owned commercial lamb slaughtering facility in Oklahoma.

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APPENDIX A

INSTRUMENT

LAMB MARKETING SURVEY

County _____ Date _____ Phone # _____

1. Hello, my name is _____ and I am with Oklahoma State University. We are conducting a survey of sheep producers in western Oklahoma concerning how they market slaughter lambs. Do you raise sheep?

- (01) _____ yes
 (02) _____ no Thank you. Good-bye

2. Since you raise sheep, we value your opinion and believe you can provide us with valuable information. May we have a few minutes of your time to ask you a few questions?

- (01) _____ yes
 (02) _____ no Thank you. Good-bye

_____, next few questions will be kept in strictest confidence and will only be reported within the totals of the survey.

3. Gender

- (05) _____ female
 (06) _____ male

4. Age

- (07) _____ years

5. Ethnic group in which you belong

- (08) _____ Caucasian/white
 (09) _____ black
 (10) _____ Indian (American or Alaskan)
 (11) _____ Hispanic (Spanish origin)
 (12) _____ Asian or Pacific Islander
 (13) _____ Other (please specify) _____

6. Level of formal education (check only one)

- (14) _____ high school graduate
 (15) _____ Vo-tech program completer (post-high school)
 (16) _____ B.S. degree
 (17) _____ Other (please specify) _____

7. Location of your residence

- (18) _____ rural farm residence
- (19) _____ rural non-farm residence
- (20) _____ small town residence
- (21) _____ urban residence

8. Number of years of residency in this county

- (22) _____ 5 years or less
- (23) _____ 6 to 10 years
- (24) _____ 11 to 15 years
- (25) _____ 16 to 20 years
- (26) _____ 21 to 25 years
- (27) _____ 26 to 30 years
- (28) _____ over 30 years

9. Type of involvement in agriculture

- (29) _____ production agriculture
- (30) _____ agricultural-related business or occupation
- (31) _____ 4-H member
- (32) _____ FFA member
- (33) _____ other (please specify) _____

10. Size of your total farming operation (acres)

- (34) _____ 25 acres or less
- (35) _____ 26 to 50 acres
- (36) _____ 51 to 100 acres
- (37) _____ 101 to 160 acres
- (38) _____ 161 to 320 acres
- (39) _____ 321 to 640 acres
- (40) _____ 641 to 1,000 acres
- (41) _____ 1,001 to 2,000 acres
- (42) _____ 2,001 to 3,000 acres
- (43) _____ 3,001 to 5,000 acres
- (44) _____ over 5,000 acres

11. Number of years you have been raising sheep

- (45) _____ years

12. Do you raise sheep full-time or part-time

- (46) _____ full-time
- (47) _____ part-time

13. Percentage of your farming operation, in acres devoted to sheep production

- (48) _____ 10% or less
- (49) _____ 11 to 25%
- (50) _____ 26 to 50%
- (51) _____ 51 to 75%
- (52) _____ 76 to 100%

14. Would you classify your sheep operation as a

- (53) _____ commercial operation
- (54) _____ purebred operation
- (55) _____ commercial and purebred combination
- (56) _____ purebred/show lamb operation

15. Time of year you lamb

- (57) _____ spring
- (58) _____ fall
- (59) _____ spring and fall

16. Number of sheep currently on your farm primarily marketed in the following designated categories

- (60) _____ breeding stock
- (61) _____ feeder lambs (less than 70 pounds)
- (62) _____ lambs for slaughter (> 70 pounds)
- (63) _____ sheep primarily for exhibition purposes
- (64) _____ sheep primarily for wool production

17. Most sheep on your farm are marketed as (rank from 1-7)

- (65) _____ ewes for breeding purposes
- (66) _____ rams for breeding purposes
- (67) _____ stocker sheep
- (68) _____ feeder lambs
- (69) _____ slaughter lambs
- (70) _____ show lambs
- (71) _____ other (please specify) _____

18. Number of slaughter lambs marketed annually

- (72) _____ none (go to 23)
 (73) _____ 25 head or less
 (74) _____ 26 to 50 head
 (75) _____ 51 to 75 head
 (76) _____ 76 to 100 head
 (77) _____ 101 to 250 head
 (78) _____ 251 to 500 head
 (79) _____ 501 to 1,000 head
 (80) _____ 1,001 to 3,000 head
 (81) _____ 3,001 to 5,000 head
 (82) _____ over 5,000 head

19. Weight at which you most frequently market slaughter lambs

- (83) _____ 95 pounds or less
 (84) _____ 96 pounds to 105 pounds
 (85) _____ 106 pounds to 115 pounds
 (86) _____ 116 pounds to 125 pounds
 (87) _____ over 125 pounds

20. Basis utilized to market slaughter lambs

- (88) _____ live weight, standard shrink
 (89) _____ live weight, overnight shrink
 (90) _____ carcass weight basis
 (91) _____ grade and yield basis
 (92) _____ other (please specify) _____

21. Method currently utilized to market slaughter lambs

- (93) _____ private treaty
 (94) _____ direct to packer
 (95) _____ local auction market
 (96) _____ terminal auction
 (97) _____ computer auction electronic marketing
 (98) _____ teleauction
 (99) _____ video auction
 (100) _____ consignment sale
 (101) _____ other (please specify) _____

22. What influences your marketing preferences

- (102) _____ standard shrink
 (103) _____ convenience (distance from market)
 (104) _____ grade and yield (cutability)
 (105) _____ price per Cwt.
 (106) _____ carcass basis
 (107) _____ reputation of marketing organization and/or agent
 (108) _____ commission charge
 (109) _____ other (please specify) _____

_____, the final two questions will once again be kept in strictest confidence and will only be reported within the totals of the survey.

23. Would you mind sharing an estimate of your 1989 gross farm income?

- (110) _____ no response
 (111) _____ \$2,500 or less
 (112) _____ \$2,501 to \$10,000
 (113) _____ \$10,001 to \$20,000
 (114) _____ \$20,001 to \$25,000
 (115) _____ \$25,001 to \$50,000
 (116) _____ \$50,001 to \$100,000
 (117) _____ over \$100,000

24. Percentage of your 1989 gross farm income derived from sheep production

- (118) _____ no response
 (119) _____ 10% or less
 (120) _____ 11 to 25%
 (121) _____ 26 to 50%
 (122) _____ 51 to 75%
 (123) _____ 76 to 100%

_____, thank you very much for your time and cooperation. This information will be a benefit to the lamb marketing survey. Thanks again. Good-bye.

APPENDIX B

HISTORIC INVENTORY OF SHEEP AND LAMB NUMBERS
IN THE UNITED STATES FROM JANUARY 1, 1960
THROUGH JANUARY 1, 1991

TABLE XXVII

Year	All Sheep January 1	Ewes 1 year & Older (1000 Head)	Lamb Crop	Ewe Lambs January 1
1960	33.17	22.41	21.01	4.56
1961	32.72	22.20	20.78	3.08
1962	30.97	31.25	19.71	3.52
1963	29.18	20.03	18.52	3.32
1964	27.12	18.72	16.99	3.09
1965	25.13	17.50	16.31	2.80
1966	24.73	16.85	15.88	3.01
1967	23.95	16.23	15.02	2.96
1968	22.22	15.29	14.44	2.55
1969	21.35	14.71	13.72	2.47
1970	20.42	13.92	13.46	2.42
1971	19.73	13.61	13.00	2.28
1972	18.74	12.91	12.60	1.97
1973	17.64	12.05	11.50	1.88
1974	16.31	11.06	10.51	1.80
1975	14.51	10.08	9.86	1.51
1976	13.31	9.31	8.89	1.34
1977	12.72	8.85	8.57	1.40
1978	12.42	8.57	7.93	1.51
1979	12.37	8.37	7.97	1.69
1980	12.70	8.53	8.26	1.88
1981	12.95	8.78	8.82	1.79
1982	13.00	8.81	8.58	1.81
1983	12.14	8.34	8.22	1.42
1984	11.49	7.87	7.79	1.24
1985	10.44	7.23	7.38	1.02
1986	9.93	6.82	7.35	1.04
1987	10.33	6.85	7.19	1.30
1988	10.77	7.08	7.12	1.30
1989	10.80	7.20	7.70	1.34
1990	11.40	7.60	7.12	1.34
1991	11.20	7.43	----	----

Source: February 22, 1986 Insights Report (ASPC); March 1988 Sheep Breeder Magazine, 1984-1989 USDA Livestock and Meat Statistics Bulletin, 784; April 1, 1991, The Shepherd Magazine.

APPENDIX C

OKLAHOMA SHEEP AND LAMB NUMBERS, JANUARY 1
INVENTORIES

TABLE XXVIII

Year	Number (1000 Head)
1991	135
1990	119
1989	136
1988	124
1987	105
1986	90
1985	85
1984	115
1983	117
1982	105
1981	95
1980	93
1979	89
1978	81
1977	72
1976	79
1975	89
1974	104
1973	120
1972	123
1971	122
1970	138
1969	136
1968	139
1967	148
1966	160
1965	149
1964	177
1963	209
1962	249
1961	301
1960	274

Source: Oklahoma Crop and Livestock Reporting Service
Annual Report, 1960-1990.

Personal Contact, May 1991, John Cole, Deputy
State Statistician.

APPENDIX D

LAMB MARKETINGS IN OKLAHOMA AS REPORTED

JANUARY 1, FROM 1960 - 1990

TABLE XXIX

Year	Number (1000 Head)
1960	164
1961	188
1962	136
1963	126
1964	125
1965	94
1966	118
1967	107
1968	87
1969	91
1970	96
1971	103
1972	93
1973	92
1974	67
1975	58
1976	49
1977	44
1978	48
1979	45
1980	46
1981	51
1982	47
1983	32
1984	66
1985	53
1986	63
1987	54
1988	67
1989	69
1990	52

Source: Oklahoma Agricultural Statistics and
Personal Contact, May 1991, John Cole,
Deputy State Statistician.

APPENDIX E

LAMB PRICES RECEIVED BY OKLAHOMA

PRODUCERS

TABLE XXX

Year	Number (1000 Head)
1990	50.90
1989	65.30
1988	66.90
1987	76.10
1986	67.60
1985	65.90
1984	57.40
1983	48.30
1982	56.10
1981	56.30
1980	62.00
1979	69.40
1978	56.50
1977	47.50
1976	45.90
1975	39.30
1974	35.20
1973	33.70
1972	28.50
1971	25.50
1970	26.00
1969	25.60
1968	24.00
1967	22.50
1966	23.80
1965	22.80
1964	19.30
1963	17.50
1962	17.50
1961	15.80
1960	18.40

Source: Oklahoma Agricultural Statistics Service and
Personal Contact, May 1991, John Cole,
Deputy State Statistician.

APPENDIX F

SHEEP INVENTORY RECORDS, OKLAHOMA

1924 - 1990

TABLE XXXI

Date Series Began	Record	Year	January 1 (1000 Head)
1924	High	1942	399
	Low	1924	63

Source: Oklahoma Agricultural Statistics.

APPENDIX G

RANK AMONG STATES, SHEEP INVENTORIES, OKLAHOMA
JANUARY 1, 1960-JANUARY 1, 1991

TABLE XXXII

Year	Rank
1960	29
1961	28
1962	27
1963	28
1964	29
1965	29
1966	29
1967	29
1968	28
1969	28
1970	28
1971	28
1972	28
1973	28
1974	28
1975	28
1976	27
1977	28
1978	26
1979	26
1980	27
1981	27
1982	27
1983	22
1984	21
1985	26
1986	24
1987	23
1988	20
1989	20
1990	22

Source: Oklahoma Agricultural Statistics Service and
Personal Contact, May 1991, John Cole,
Deputy State Statistician.

APPENDIX H

A SUMMARY OF OKLAHOMA SHEEP PRODUCERS PRIMARILY
MARKETING LAMBS AS FEEDER LAMBS

TABLE XXXIII

Feeder Lambs	Frequency N=254	Percent %
None	156	61.41
1 - 25	40	15.75
26 - 75	24	9.45
100 - 200	14	5.51
201 - 300	5	1.97
301 - 750	7	2.76
Non-respondents	8	3.15
Total	<hr/> 254	<hr/> 100.00

APPENDIX I

A SUMMARY OF OKLAHOMA SHEEP PRODUCERS MARKETING
LAMBS AS SLAUGHTER LAMBS

TABLE XXXIV

Slaughter Lambs (Head)	Frequency N=254	Percent %
None	180	70.87
1 - 25	43	16.93
26 - 75	16	6.30
85 - 150	6	2.36
200 - 390	4	1.57
1200	1	0.40
Non-respondents	4	1.57
Total	<u>254</u>	<u>100.00</u>

APPENDIX J

A SUMMARY OF OKLAHOMA SHEEP PRODUCERS PRIMARILY
MARKETING LAMBS AS EXHIBITION SHEEP

TABLE XXXV

Exhibition Sheep (Head)	Frequency N=254	Percent %
None	193	75.98
1 - 25	55	21.66
60 - 85	2	0.79
Non-respondents	4	1.57
Total	<u>254</u>	<u>100.00</u>

APPENDIX K

A SUMMARY OF OKLAHOMA SHEEP PRODUCERS PRIMARILY
INVOLVED IN SHEEP PRODUCTION FOR
WOOL MARKETING

TABLE XXXVI

Sheep For Wool (Head)	Frequency N=254	Percent %
None	233	91.73
1 - 22	3	1.18
21 - 40	2	0.79
41 - 90	1	0.40
91 - 140	1	0.40
Non-respondents	14	5.50
Total	<u>254</u>	<u>100.00</u>

APPENDIX L

DETERMINING FINAL YIELD GRADE

I. Determine a "preliminary yield grade" by hundredths (2.10, 3.35, 3.58, etc.), to reflect the external fatness of the carcass based on the following schedule:

Fat Thickness Over Rib eye*	Preliminary Yield Grade
.05 inch	2.33
.10	2.67
.15	3.00
.20	3.33
.25	3.67
.30	4.00
.35	4.33
.40	4.67
.45	5.00
.50	5.33
.55	5.67
.60	6.00

*This fat thickness measurement over the rib-eye muscle should be adjusted, as necessary, to reflect unusual amounts of fat on other parts of the carcass.

II. Determine the final yield grade (1 to 5) by adjusting the preliminary yield grade, as necessary, for variations in kidney and pelvic fat from 3.5 percent and for variations in leg conformation grade from average Choice.

A. Rate of adjustment for percent of kidney and pelvic fat:

1. For each percent of kidney and pelvic fat more than 3.5 percent add 0.25 of a grade to the preliminary yield grade.
 2. For each percent of kidney and pelvic fat less than 3.5 percent subtract 0.25 of a grade from the preliminary yield grade.
- B. Rate of adjustment for leg conformation grade:
1. For each one-third of a grade that the conformation of the legs exceeds average Choice subtract 0.05 of a grade from the preliminary yield grade.
 2. For each one-third of a grade that the conformation of the legs is less than average Choice add 0.05 of a grade to the preliminary yield grade.

NOTE: Fractional parts of the final yield grade are dropped. For example, a carcass with a calculated yield grade of 3.85 is a Yield Grade 3.

Source: "Lamb and Mutton Grading." Meat Evaluation Handbook. Chicago, IL: National Livestock and Meat Board, 1977.

VITA

Mickey R. Jones

Candidate for the Degree of

Master of Science

**Thesis: AN ASSESSMENT OF PRODUCTION PRACTICES AND MARKETING
PREFERENCES AMONG SHEEP PRODUCERS IN OKLAHOMA**

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