

FINAL REPORT

WEST VIRGINIA LAMB MARKETING INFORMATION PROJECT

SUBMITTED BY

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Executive Summary

The West Virginia Lamb Marketing Information Project provides a comprehensive overview and helps characterize the lamb production and lamb marketing environments in West Virginia. The Project, funded under the USDA-AMS Federal-State Marketing Improvement Program, was a cooperative effort between the West Virginia Department of Agriculture Marketing and Development Division, West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences, Division of Animal and Veterinary Sciences and Division of Resource Management, and the West Virginia Sheep Management Project.

The purpose of the Information Project was to develop a centralized database for lamb market and lamb marketing information in West Virginia. With the emergence and growth of certain segments of the lamb market, it has become increasingly important for producers to have access to reliable information about these markets. The Project was undertaken to provide WV sheep producers with the information they need to better understand the changing marketing environment in WV and to evaluate potential marketing alternatives and opportunities. Supplementary information collected and analyzed for the Project provides additional perspective of sheep production and lamb marketing in WV relative to both regional and national production and marketing practices and trends.

A major component of the Information Project was a Marketing Survey of Sheep Producers in WV. The survey was developed and administered to 925 WV sheep producers. With a response rate of 36.5 percent, the survey captured approximately 46 percent of the state's breeding ewe population, and represented sheep producers in 47 of the state's 55 counties. The survey found 67.5 percent of WV sheep producers planned to expand or maintain their flock size during the subsequent three-year period. The average flock size of survey respondents was 39 head and 30 different purebred breeds of sheep were reported.

A number of WV sheep farmers have been working with West Virginia University and the West Virginia Sheep Management Project to help develop and test protocols and products to improve the success of fall-lambing programs. The profitability of fall-lambing is tied to higher spring market prices for lambs and to reduced production losses due to parasites and predation. In 2001, an estimated 94 percent of WV lambs were born during the months of January - May, and an estimated six percent were born June - December. Only an estimated 2.4 percent of WV lambs were born September - November (fall-lambing). On WV operations, number of breeding ewes, choice of market outlet, and the importance placed on predator management and on fall or accelerated lambing programs, were significant with respect to lambing season. Predation management was rated very important or important to overall profitability of the sheep enterprise by 88.9 percent of producers. Of those, only 11.2 percent reported lambs born out-of-season.

Regionally, ethnic markets for lambs are becoming increasingly important. These markets influence the demand for certain types of lambs, as well as when and where lambs are marketed. The survey found that in 2001, more WV lambs were marketed through out-of-state livestock auctions than through in-state livestock auctions. Data collected indicated that WV prices for 100-125 pound slaughter lambs tended to be lower than prices for similar weight lambs marketed through Virginia livestock auctions (Valley prices) and through the New Holland, PA livestock auction. (New Holland is the largest auction market for lambs in the region.)

Approximately one-third of producers responding to the survey indicated an interest in participating in an organized marketing program. Producers that indicated "convenience" was an important factor affecting their choice of market outlet were less interested in an organized marketing program. "Distance to market" and "marketing fees and commissions" were marginally significant factors influencing producer's interest in such a program. "Local lamb marketing pools", "pool lambs for transport to a terminal market", and "special state-graded sales at WV sale barns" were the top ranking potential marketing alternatives.

Producer demographics showed that age and attendance at educational programs related to sheep production were significant in determining the degree of importance producers placed on strategies to enhance profitability. Older producers were less likely to consider strategies to enhance profitability, while producers that had attended sheep production programs were more likely to assign importance to profitability enhancing strategies. Producers tended to assign greater importance to these strategies as flock size increased.

The West Virginia Lamb Marketing Information Project has provided a broad overview of lamb production and marketing in West Virginia. The information collected provides a basis for the on-going evaluation and development of lamb marketing efforts in West Virginia, as well as guidance in the development of future educational programs and activities in the state. The opportunities identified in the project can enhance the role of sheep production in rural economic development in West Virginia.

ACKNOWLEDGMENTS

The West Virginia Lamb Marketing Information Project study team would like to express our appreciation to Dale King and Dan Norris of the USDA West Virginia Agricultural Statistics Service for their input on and administration of the WV Lamb Marketing Survey. We extend our thanks to Tracy Fitzsimmons and Birdie Wood of the West Virginia Department of Agriculture Marketing and Development Division, Taylor Cox, Officer in Charge, USDA/AMS Livestock Division, Pennsylvania, and Scott Greiner, Extension Animal Scientist, Department of Animal and Poultry Sciences, Virginia Polytechnic Institute and State University, for their assistance in providing lamb market information and price data. Thank you also to Paul Rodgers, Deputy Director of Policy, American Sheep Industry Association for providing national data and situation and outlook information for the U.S. sheep industry and to Marlon Knights, Assistant Professor, West Virginia University Division of Animal and Veterinary Sciences for his input on the statistical analysis.

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LIST OF ACRONYMS

ALC = American Lamb Council

ASI = American Sheep Industry Association

ITC = U.S. International Trade Commission

DLIAAP = Domestic Lamb Industry Adjustment Assistance Program

LMAAP = Lamb Meat Adjustment Assistance Package

NLFA = National Lamb Feeders Association

NESGMP = Northeast Sheep and Goat Marketing Program

NHSS = New Holland Sales Stables, Inc.

PA ASS = Pennsylvania Agricultural Statistics Service

USDA/AMS = USDA Agricultural Marketing Service

USDA/ERS = USDA Economic Research Service

USDA/NAHMS = USDA National Animal Health Monitoring System

USDA/NASS = USDA National Agricultural Statistics Service

VDACS = Virginia Department of Agriculture and Consumer Services

VPI = Virginia Polytechnic Institute and State University

WVASS = West Virginia Agricultural Statistics Service

WVDA = West Virginia Department of Agriculture

WVSMP = West Virginia Sheep Management Project

WVU = West Virginia University

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INTRODUCTION

The West Virginia Lamb Marketing Information Project was funded under the USDA-AMS Federal-State Marketing Improvement Program. The purpose of the Project was to develop a comprehensive, centralized database for lamb market and lamb marketing information in West Virginia. The Project was a cooperative effort between the West Virginia Department of Agriculture Marketing and Development Division, West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences, Division of Animal and Veterinary Sciences and Division of Resource Management, and the West Virginia Sheep Management Project.

The objectives of the Project were:

- 1) Characterize lamb production and supply in West Virginia.
- 2) Characterize the current marketing practices of West Virginia lamb producers and evaluate the economic and non-economic factors that influence their marketing decisions.
- 3) Survey the marketing needs of West Virginia lamb producers and producer interest in coordinating marketing practices and in developing new marketing opportunities.
- 4) Characterize West Virginia livestock auction markets and out-of-state markets that compete directly for West Virginia lambs.
- 5) Review available information that will help characterize consumer demand for lamb, including carcass specifications, seasonal demand patterns, and other regional marketing efforts and opportunities.
- 6) Develop a database of West Virginia production and market information that will:
 - a) serve as a central clearinghouse for lamb marketing information in West Virginia,
 - b) aid in the evaluation of different marketing alternatives and opportunities, and
 - c) strengthen marketing linkages by helping to coordinate and facilitate communication between and among lamb producers, between producers and buyers, and between producers and end-use consumers.

STATEMENT OF NEED

Specific information characterizing the marketing environment in which West Virginia sheep producers currently operate is limited. Breeding sheep inventories in West Virginia, like those across the country, have declined significantly. A number of studies have sought to identify and explain those factors that have contributed to this long-term, industry-wide decline. However, the impact that inventory changes have had on marketing outlets and opportunities, particularly regional outlets and opportunities, have not been similarly interrogated. Market reports and analyses based on national figures often mask regional differences in terms of production, marketing practices, patterns of supply and demand, and prices. The changing demographics of lamb production as well as changing consumer demographics challenge both the efficiency and effectiveness of traditional lamb marketing systems. The West Virginia Lamb Marketing Information Project was undertaken to provide WV sheep producers with the information they need to better understand the changing marketing environment in WV, to evaluate marketing alternatives, and to participate in and benefit from both regional and national marketing programs and opportunities.

PRODUCER SURVEY

A producer survey (see Appendix A) was developed by the West Virginia Sheep Management Project (WVSMP), West Virginia University (WVU) Division of Animal and Veterinary Sciences and Division of Resource Management, with input from the West Virginia Agricultural Statistics Service (WVASS) to:

- 1) Collect demographic information characterizing lamb production and supply by geographic region in West Virginia, including flock size, ewe breeds, ram breeds, number of lambs marketed annually, average age of lambs when marketed, average weight of lambs when marketed, and marketing periods (months when lambs are marketed).
- 2) Identify current marketing practices and market outlets.
- 3) Identify producer marketing needs and concerns.
- 4) Assess producer interest in alternative marketing opportunities.

West Virginia Agricultural Statistics Service (WVASS) was contracted to administer the survey. WVASS services were utilized in an effort to identify and reach the greatest possible number of sheep producers in West Virginia with the survey. WVASS was provided a mailing list compiled by the West Virginia Sheep Management Project. The WVSMP mailing list was cross-referenced with the WVASS confidential database of sheep producers in WV. Any WVSMP listing that did not appear in the WVASS database was validated via telephone contact¹.

The survey was distributed to 925 WV sheep producers in January, 2002. On the recommendation of WVASS, survey distribution was limited to sheep producers with more than five breeding sheep. Information was collected for the period January 1 through December 31, 2001. WVASS reported 1,000 sheep producers in WV on January 1, 2001. Therefore, the target population included approximately 92.5 percent of sheep producers in WV. In an effort to maximize response rate and minimize labor requirements, the January dates were selected so that WVDA field enumerators could administer the survey at the same time on-farm data were collected for the annual WV Agricultural Statistics Report. Field enumerators collected survey information on 44 farms. The bulk of the surveys, 881, were distributed via the postal service.

A total of 338 surveys were returned, for a response rate of 36.5 percent. Survey responses were tabulated and analyzed by the WVSMP and the WVU Division of Resource Management. Responses were voluntary and confidential, and individual respondents could not be identified. In whole or in part, 332 surveys were included in the results and analysis. Surveys were returned from 47 of the state's 55 counties. Figure 1 shows the distribution of sheep and lamb inventories as reported by WVASS for 2001 (WVASS 2001 Annual Bulletin No. 32). The relative distribution of breeding sheep and of lambs marketed captured by the survey, was generally consistent with that of the leading sheep producing counties reported by WVASS (Table 1).

¹ Through this process, WVASS was able to add a number of WV sheep producers to its database that had not previously been included. These additions were reflected in the January 1, 2003 WVASS report which showed an increase in the number of operations with sheep from 1000 (January 1, 1999-2002) to 1,100 (January 1, 2003).

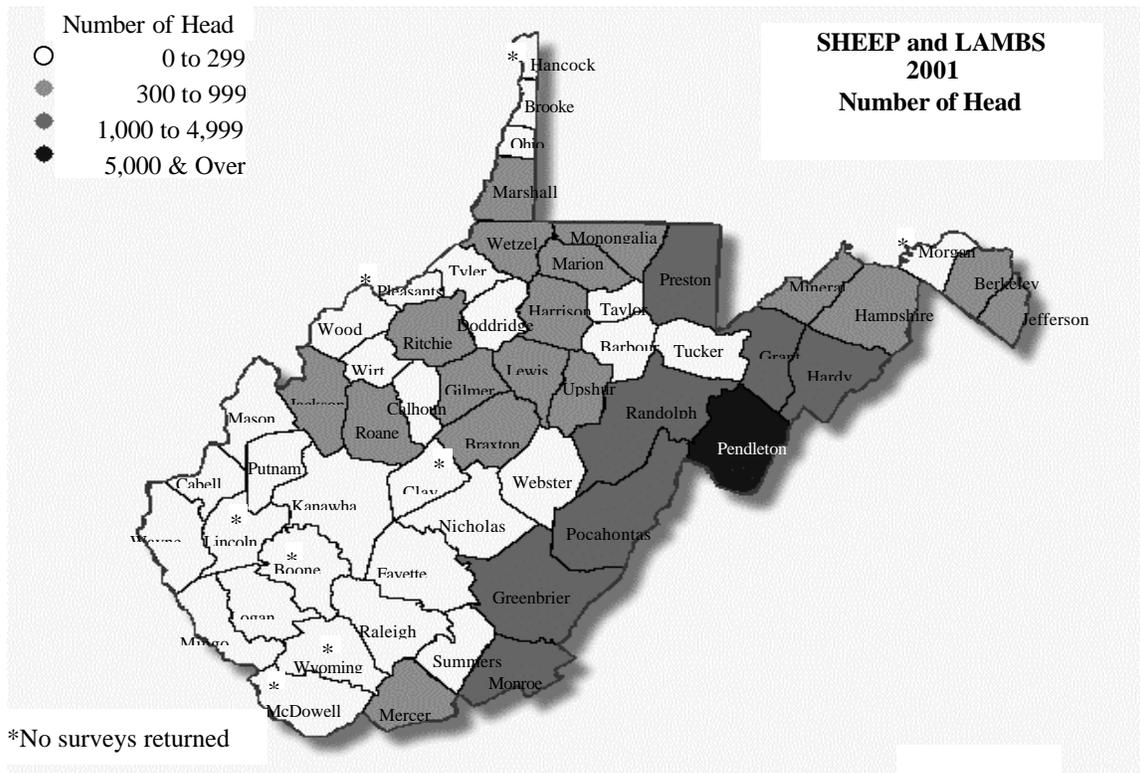


Figure 1.
Source: Adapted from WVASS 2001 Annual Bulletin No. 32

Table 1. 2001 Inventories and Lamb Marketings

Leading Counties	WVASS % Sheep & Lambs	Survey % Breeding Sheep	Survey % Lambs Sold
Pendleton	20.9%	21.2%	23.9%
Pocahontas	10.6%	9.5%	8.7%
Randolph	7.7%	10.3%	11.1%
Greenbrier	7.7%	8.0%	6.8%
Preston	7.1%	7.8%	10.3%
Hardy	6.0%	7.0%	6.3%
Monroe	4.6%	2.6%	3.0%
Grant	3.7%	3.1%	3.3%
Monongalia	2.3%	2.4%	2.2%
Jackson	2.0%	2.2%	1.6%
Hampshire	2.0%	1.3%	1.7%

Source: Survey, WVASS

SURVEY FINDINGS

Note:

- ➔ Data were collected for the period January 1 through December 31, 2001.
- ➔ All estimates and analyses presented in the Survey Findings that relate directly to a specific survey question were calculated based on the number of usable responses received for that particular question.
- ➔ For the purpose of this report, "percent WV producers" and "percent WV lambs" should be taken to mean that percentage based on survey response.
- ➔ Selected information from the USDA-National Animal Health Monitoring System (NAHMS) Sheep 2001 Study (July 2002), has been included where appropriate and instructional. Unless otherwise indicated, the NAHMS data presented are for the year 2000 (similar data for 2001 were not available). This information has been included to provide an informal contextual framework only and across-year comparisons should be so mitigated.
- ➔ Trends in average prices received at WV livestock auctions were, for certain periods, derived from relatively thin data sets (low trading volume). As such, comparatively few lambs sold at a single market location can skew market averages higher or lower during a particular period. Caution should be exercised when comparing markets during periods of low trading volume, particularly in the short-run (single year averages).

I. Inventories (January 1, 2001)

A. Ewe Inventory

A total of 12,852 breeding ewes was reported. The January 1, 2001 WVASS report estimated the breeding ewe and lamb population in WV at 28,000 head. Therefore, the survey captured an estimated 45.9% of the January 1, 2001 breeding ewe inventory.

B. Ram Inventory

A total of 676 breeding rams was reported. The January 1, 2001 WVASS report estimated the breeding ram population at 1,000 head. Therefore, the survey captured an estimated 67.6% of the January 1, 2001 breeding ram inventory. The 2001 ram to ewe ratio is estimated at 1:19 (survey).

C. Flock Size

The average flock size (breeding ewes plus breeding rams) of survey respondents was 39 head compared to 29 head reported by WVASS for the same period². Over 3/4 of flocks (77.4%) reported fewer than 50 breeding ewes, while 92% of flocks reported fewer than 100 breeding ewes (Figure 2).

WV Ewe Flock Distribution by Size

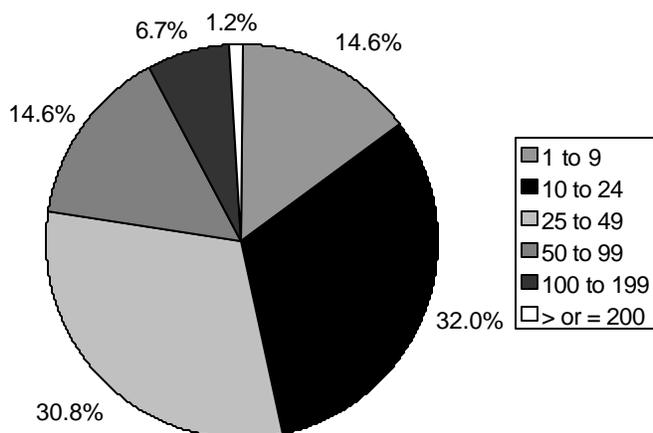


Figure 2.

Source: Survey

² Remember that flocks with fewer than six breeding sheep were not included in the survey distribution. Several producers responding to the survey did, however, report fewer than six breeding sheep. Data collected from those operations were included in the survey analysis.

Like breeding sheep inventories throughout the country, breeding sheep inventories in West Virginia continued a pattern of long-term decline during the mid- and late 1990s (Figure 3). Pressure from predators, competition for grazing land, drought, labor, lamb price volatility, low wool prices, long-term declines in the per capita consumption of both lamb and wool, and increased competition from imports have all been cited as contributing to this decline. During the period 1994-2000, WV breeding sheep inventories fell by almost 50 percent (from 60,000 to 31,000 head). Nationally, breeding sheep inventories fell 30 percent during that same period. However, during the 2000-2003 period, WV inventory numbers appear to have stabilized somewhat, as have the number of operations with sheep in WV. Nationally, the rate of inventory decline has also slowed.



Figure 3.
Source: WVASS, USDA/NASS

D. Inventory Outlook

Compared to 2001, 67.5% of WV sheep producers indicated that they planned to expand or maintain the same flock size during the three-year period 2002-2004. Only 11.2% planned to decrease flock size, and 20.9% were uncertain as to their inventory outlook (Figure 4).

These findings are generally consistent with those reported in the USDA-NAHMS Sheep 2001 Study which found 72.8% of eastern producers (sample base: Ohio, Pennsylvania, and Virginia) and 73.6% of producers nationally expected to have more sheep or the same number of sheep in 2006 compared to January 1, 2001.

WV Inventory Outlook, 2002-2004

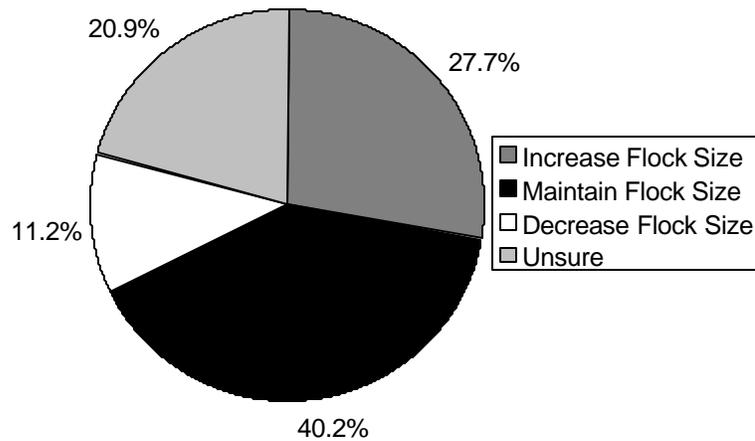


Figure 4.
Source: Survey

E. Breed Composition of Ewes

There were 26 different purebred breeds of breeding ewes reported. The highest percentage of farms (63.1%) reported Suffolk or Suffolk-crosses as the predominant breed of their ewe flock, followed by Dorset or Dorset-crosses (32.9%), Cheviot or Cheviot-crosses (9.5%), and Hampshire or Hampshire-crosses (5.2%). A long- or colored-wool breed was reported as the predominant breed of the ewe flock on 2.5% of farms and a hair sheep breed on 1.8% of farms.

F. Breed Composition of Rams

There were 24 different purebred breeds of breeding rams reported. The highest percentage of farms (49.5%) reported Suffolk or Suffolk-crosses as the predominant breed of ram, followed by Dorset or Dorset-crosses (28.7%), Cheviot or Cheviot-crosses (9.4%), and Hampshire or Hampshire-crosses (6.5%). A long- or colored-wool breed was reported as the predominant ram breed on 6.5% of farms and a hair sheep breed on 2.9% of farms.

G. Genetic Diversity

A tremendous amount of genetic diversity exists in the state's breeding sheep flock. In all, 30 different purebred breeds of sheep as well as numerous crossbred sheep were reported³ (see Appendix B). This diversity implies significant variation in potential market offerings. Although some consumer markets in the northeastern U.S., including certain ethnic markets, differ in their preference for a particular type of lamb (age, weight, amount of finish, sex, breed), lack of uniformity coupled with relatively small and often unpredictable offerings, have made it difficult to attract buyers to WV auctions. This degree of genetic diversity poses a challenge to the development of organized marketing programs that draw from a broad producer base. For example, uniformity, consistency, and predictability are considered important attributes of most successful feeder and slaughter lamb pools - particularly when targeting higher-value markets.

Breed type also has a profound affect on both production and production systems. Leymaster (2002) stated, "*[Breed] variation does not imply that one breed is better than the other. The value of breed diversity is that producers can identify and use a breed or breeds that perform at a level consistent with marketing goals and with production resources such as feed availability, labor, facilities, and managerial skills.*" Leymaster explained how the appropriate use of breeds in various crossbreeding systems can improve the efficiency of meat production. A better understanding of both breed type (attributes and performance) and of crossbreeding systems can help lamb producers work toward increasing the efficiency, and in turn the profitability of their operations.

Sheep breeds are often classified as meat breeds, wool breeds, dairy breeds, and hair sheep breeds. Most breeds of sheep are considered dual-product breeds in that they produce both meat and wool. Producers should recognize that targeting breeding programs toward the production of higher-quality, higher-value wool, may mean sacrificing carcass quality and value in lamb production. The reverse is also true.

Approximately 20% of producers responding to the survey indicated that they marketed some lambs as breeding stock in 2001. Given the diverse genetic base and the relatively small average flock size in WV, some WV production and management systems may be particularly well suited to identifying, developing, and supplying high-quality seedstock genetics.

³ The WVDA 2002 West Virginia Sheep and Wool Directory, lists 8 additional purebred breeds not reported in the survey.

H. Lambs Born by Month

In 2001, 99% of operations reported one or more lambs born during the months of January-May (“in season”), while only 12.5% of operations reported one or more lambs born during the months of June-December (“out-of-season”), and only 4.7% of operations reported one or more lambs born during September-November (“fall-lambing”). Only 1% of operations reported lambs born exclusively during the June-December period. An estimated 94% of WV lambs were born January-May and an estimated 6% were born June-December in 2001. (An estimated 2.4% were born September-November.)

Of operations reporting lambs born out-of-season, 55% had less than 1/4 of their lambs born out-of-season, 20% had 1/4 to 1/2, and 25% had more than 1/2 of their lambs born out-of-season.

Figure 5 shows the percentage of operations with lambs born by month for WV during 2001 (survey), and for the eastern region and nationally during 2000 (NAHMS, July 2002).

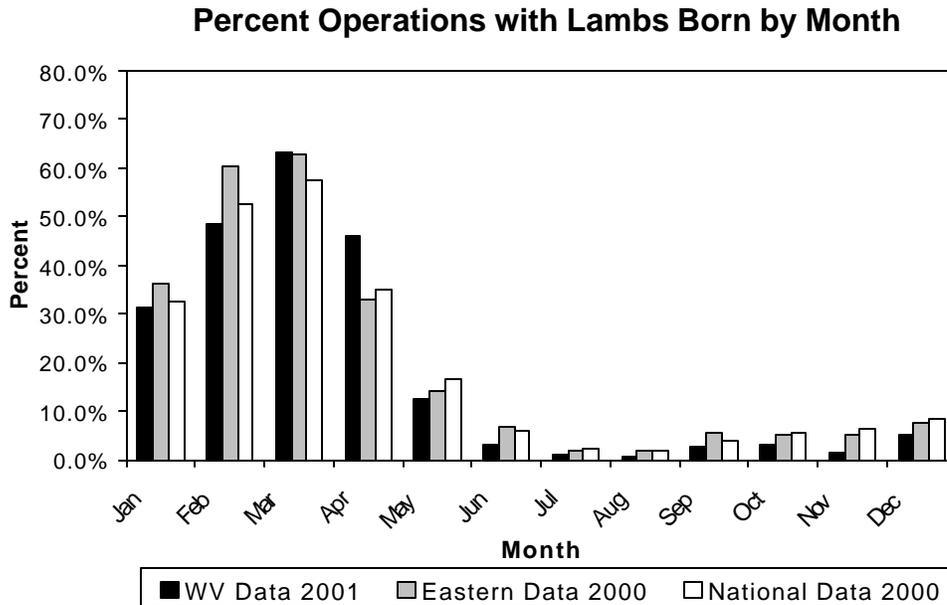


Figure 5.
Source: Survey, USDA/NAHMS

On WV operations, number of breeding ewes, choice of market outlet, and the degree of importance placed on predator management and fall or accelerated lambing programs, were all significant factors with respect to lambing season.

II. Lambs Marketed

A. Monthly Supply

Monthly lamb supplies generally exhibit seasonal patterns. Seasonal patterns are those patterns within a given production or marketing year that are repeated from one year to the next. Seasonal patterns emerge as a consequence of seasonal production and supply, and of seasonal demand by consumers. Consistent with the biological reproductive pattern of the ewe, availability and sales of lambs are generally limited during the first quarter period - particularly sales of "new crop" lambs. Supplies typically increase during the second quarter attracted by higher market prices associated with increased consumer demand during the Easter holidays, then peak during the third quarter when large numbers of spring-born lambs are weaned and moved off of summer pastures. Supplies typically decline during the fourth quarter of the year.

When examined on a *percentage basis*, however, WV marketings (survey 2001) and eastern region marketings (2000) deviated from this typical marketing pattern (Figure 6). Lamb marketings for the eastern region (2000) peaked during the second quarter and for WV (survey 2001) marketings peaked during the fourth quarter. WV marketings during the second, third, and fourth quarter periods showed less variation than might have been anticipated based on long-established supply patterns and on WV lambing patterns.

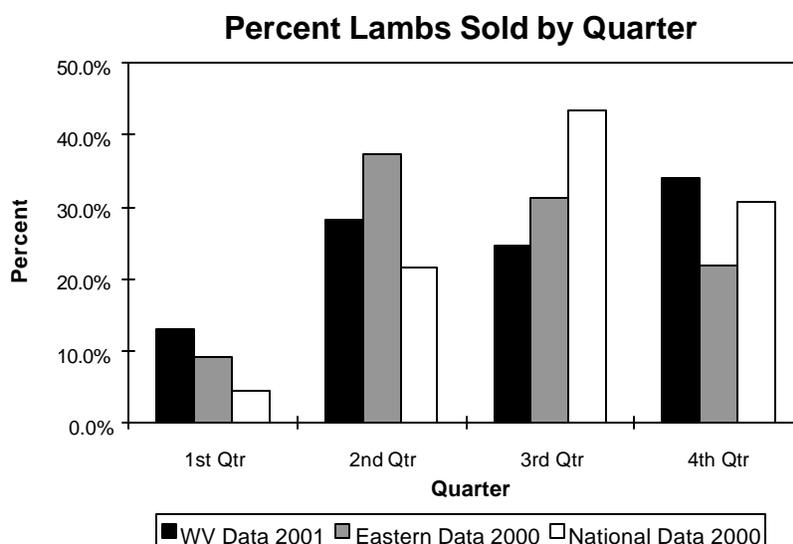


Figure 6.
Source: Survey, USDA/NAHMS

It should be noted, however, that over a longer-run period (1996-2001), marketings reported through WV livestock auctions displayed the more typical marketing pattern (see Figure 9). These findings may indicate that WV survey respondents and producers surveyed in the eastern region for the NAHMS Sheep 2001 Study, showed greater flexibility in their production practices and in their ability to respond to short-run regional market signals.

Figure 7 shows the monthly supply pattern (all markets) derived from survey data and the monthly supply pattern for lambs marketed through WV livestock auctions (WVDA data). The margin between survey respondent marketings and WV livestock auction marketings is wider during the period February - July, compared to August - January. The February - July period includes those months when supplies are tight, when WV livestock auctions show the greatest degree of price variation between market locations (see Section II, D), and when price incentives at some of the larger regional markets attract lambs from greater distances (see Section II, F). During late summer and early fall when supplies are increasing and prices are decreasing, there appears to be less incentive to exploit alternative market outlets in lieu of local WV auction markets.

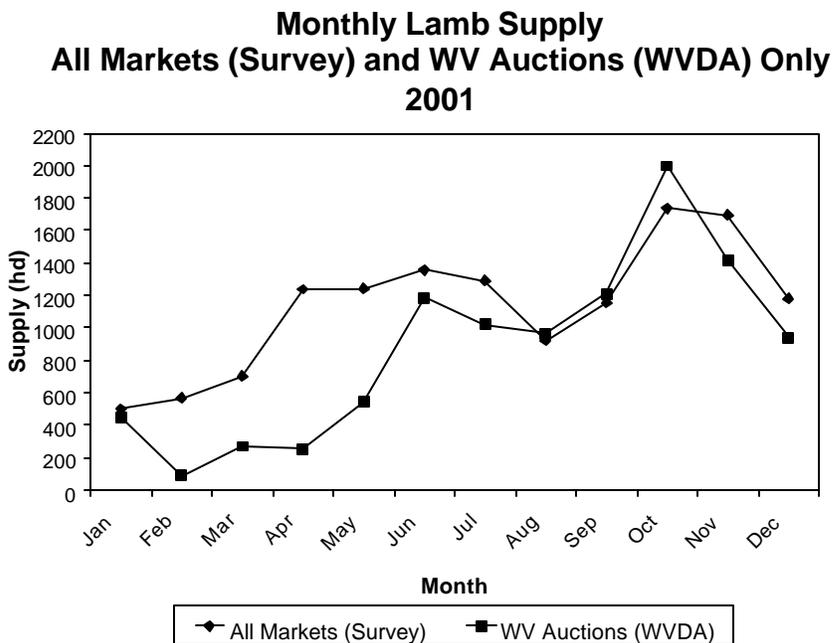


Figure 7.
Source: Survey, WVDA

The survey asked producers to identify all market outlets for their lambs in 2001 (see Section V). Based on producer response and data provided by the WVDA, the survey captured approximately 30% of the lambs marketed through WV livestock auctions in 2001.

B. Operations that Sold Lambs

In 2001, 15% of WV operations sold lambs during the 1st quarter, and over 60% of WV operations sold lambs during the 2nd, 3rd, and 4th quarters. While a direct across-year comparison cannot be made, note that the percentage of WV operations marketing lambs during the 2nd, 3rd, and 4th quarters of 2001 was appreciably higher, than was reported for operations in the eastern region and for all operations (national) during those same periods of 2000 (NAHMS, July 2002) (Figure 8).

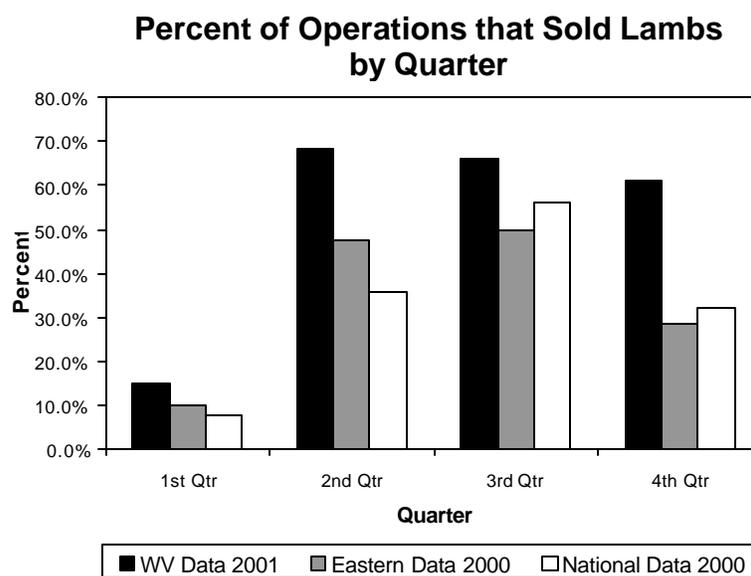


Figure 8.
Source: Survey, USDA/NAHMS

C. West Virginia Prices

Lamb prices also tend to follow seasonal patterns. Although prices typically increase just prior to the Easter holiday, historically, the *general level* of prices in WV tends to peak during May, irrespective of the Easter holiday. (Note that the date for Western Easter ranges from March 22 to April 25 for any given year.) WV lamb prices generally reach an annual low during October (Figure 9).

**General Trends in WV Monthly
Lamb Prices and Supply
(1996-2001)**

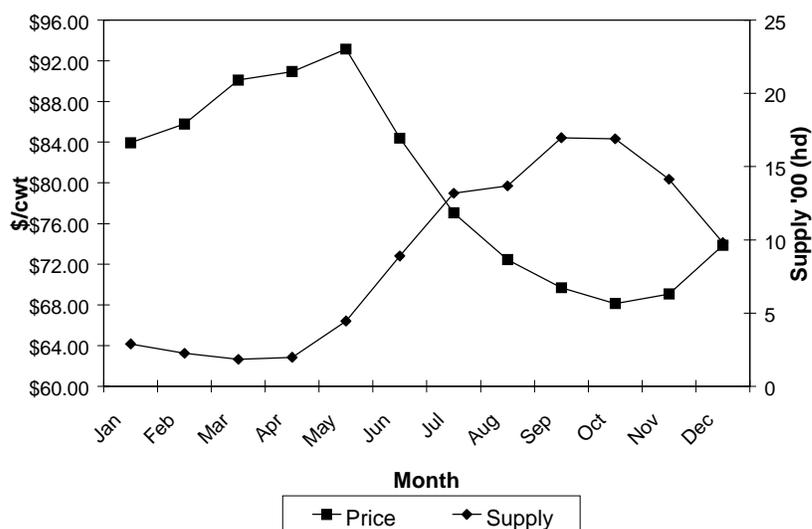


Figure 9.
Source: WVDA

Figure 10 shows the relative prices for slaughter and feeder lambs at WV markets during 2001. Average slaughter lamb prices peaked in March at \$103.60 per hundred weight (cwt), while average feeder lamb prices peaked in February at just over \$100 per cwt. Slaughter lamb prices dropped 50 percent in 2001, reaching a low of \$51.34 per cwt in October. Feeder lamb prices also reached their lowest level in October, at \$56.72 per cwt, a 44 percent decline. Five-year average slaughter and feeder lamb prices (1996-2000), showed only a 23 and 24 percent difference, respectively, between the market high and market low for the period (Figure 11).

Several factors converged to depress slaughter and feeder lamb prices across the country during the second half of 2001. Poor market information with the implementation of Mandatory Price Reporting (MPR)⁴ beginning in April 2001, and a currency exchange rate favorable to increased imports (see Section II, K) contributed to the volatility in the market.

⁴ Due to confidentiality guidelines, during the early months of MPR the market went rapidly from a situation of limited price information under the old voluntary reporting system, to virtually no price information much of the time under the new mandatory reporting system. Confidentiality guidelines were later modified, allowing more price information to be made available.

2001 Monthly Slaughter and Feeder Lamb Prices at WV Markets

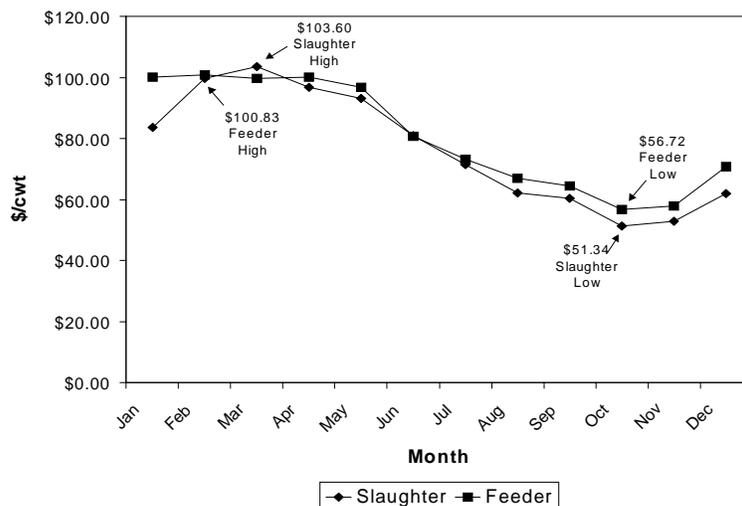


Figure 10.
Source: WVDA

The Muslim market is a growing market for both lambs and goats in the region (see Section II, E). In recent years, increased demand by the Muslim market, particularly holiday demand, has influenced peak price periods in the region and in WV. In 2001, the Muslim holiday Eid al-Adha, "Festival of Sacrifice", was March 6. Muslim holiday lambs are generally purchased and shipped about 7 to 10 days prior to the holiday. At WV markets, this increase in the demand for holiday lambs was reflected in higher prices at the end of February and early March in preparation for Eid al-Adha. Both Western and Orthodox Easter were celebrated April 15, 2001, and both slaughter and feeder lamb prices remained high during April, falling off only slightly in May (Figure 10).

Average Monthly Slaughter and Feeder Lamb Prices at WV Markets (1996-2000)

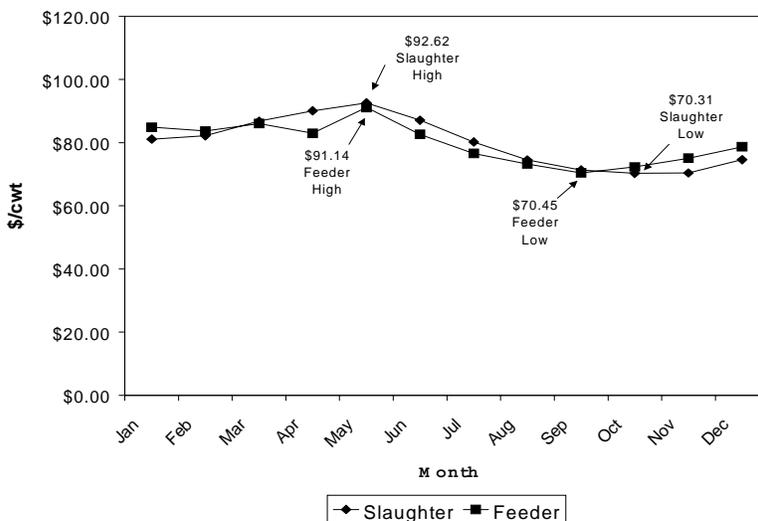


Figure 11.
Source: WVDA

D. Market Location

Figure 12 shows the locations of licensed WV livestock auction markets (see Appendix C) and of selected out-of-state livestock auction markets relative to WV sheep populations. Preliminary analysis of WVDA market data for the period 1996-2001, indicates that the average prices received at WV markets varied significantly by market location during the 1st and 2nd quarters for both slaughter and feeder lambs. Price variation between market locations was less significant during the 3rd and 4th quarters. (The most significant variation in prices occurred during those periods when lamb supplies are typically tight and demand is strong).

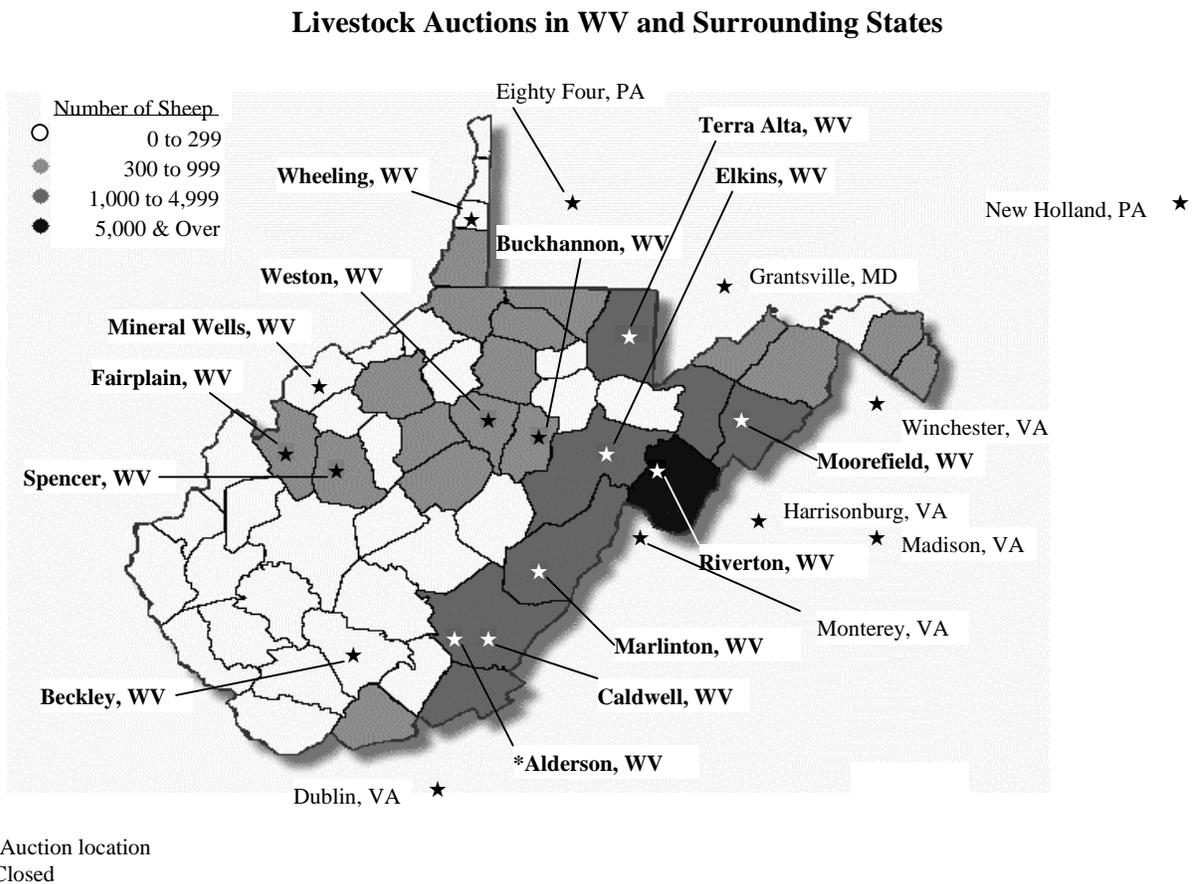


Figure 12.
Source: WVDA, WVASS

Based on WVDA market information, the Riverton market⁵ accounted for approximately 66 percent of the slaughter lambs sold through WV livestock auctions during 2001 (Figure 13). Feeder lamb sales were more evenly distributed, with the Riverton, Caldwell, and Moorefield markets accounting for approximately 25 percent, 21 percent, and 18 percent, respectively, of feeder lambs sold through WV livestock markets during 2001.

2001 Slaughter and Feeder Lamb Sales at WV Livestock Markets

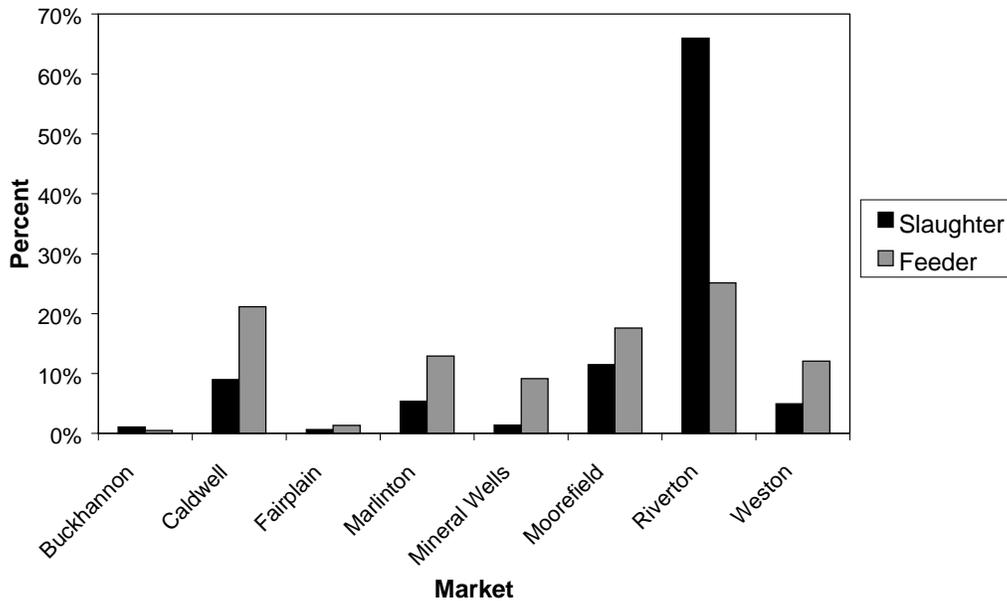


Figure 13.
Source: WVDA

E. Ethnic Markets

Regionally, ethnic markets for lambs are becoming increasingly important. Although the Jewish population is considered a traditional consumer base for lamb in the U.S., in recent years, the growing Muslim market has influenced lamb markets across the northeast. By law, the U.S. Census Bureau cannot collect information about religion. Nonetheless, estimates of the U.S. Jewish population from other sources are fairly consistent. The National Jewish Population Survey 2000-01, placed the U.S. Jewish population at 5.2 million, down 5 percent from 1990 (United Jewish Communities, 2002). In contrast, estimates of the U.S. Muslim population vary widely, ranging anywhere from 1 to 7 million. Most sources do, however, agree that the Muslim population in the U.S. is increasing while the Jewish population is decreasing. The American Religious Identity Survey conducted in 2001 estimated that during the period 1990-2000, the

⁵ The Riverton market is more accurately termed a “livestock buying station” rather than a “livestock auction”. Weights are taken and lambs graded by WVDA livestock graders at the Riverton market.

Jewish population in the U.S. decreased by 10 percent while the Muslim population more than doubled, increasing by 109 percent (Kosmin, Mayer and Keysar, 2001). Another source estimates that by the year 2010, the U.S. Muslim population will surpass the Jewish population - with Islam becoming the second largest organized religion in the U.S., following Christianity (Power, 1998).

If the Muslim population and market in the region do in fact continue to grow, they could have a pronounced effect on long-established regional price and supply patterns. Each year, Jewish and Christian holidays fall on particular dates on the western/Gregorian calendar (e.g. the Christian celebration of Christmas) or during a particular time frame (e.g. the Jewish celebration of Rosh Hashanah, September/October; and the western Christian celebration of Easter, March 22 - April 25). In contrast, on the western calendar, Muslim holidays move back approximately eleven days each year (Table 2). This occurs because the Islamic calendar, the Hijra, is a lunar calendar, whereas the Gregorian calendar is a solar calendar.

Table 2. Ethnic Holidays 2000-2003

Holiday	2000	2001*	2002	2003
Eid al-Adha	March 16	March 6	February 23	February 12
Start of Passover	April 20	April 8	March 28	April 17
Western Easter	April 23	April 15	March 31	April 20
Orthodox Easter	April 30	April 15	May 5	April 27
Start of Rosh Hashanah	September 29	September 17	September 6	September 26
Yom Kippur	October 9	September 27	September 16	October 6
Start of Ramadan	November 27	November 17	November 6	October 27
Eid al-Fitr	December 28	December 17	December 6	November 26
Start of Hanukkah	December 21	December 9	November 29	December 19
Christmas	December 25	December 25	December 25	December 25

*Survey year.

Multiple Sources: (See Appendix D)

The Islamic calendar year is 354 days long - 11 days shorter than the western calendar year. Like the Gregorian calendar, the Hijra consists of twelve months. According to the Hijra, the day starts at sunset with the beginning of each new month determined by the sighting of the crescent moon (the symbol for Islam). Because the Muslim calendar is lunar-based, it does not follow the seasons. This results in the calendar rotating around the seasons in a 33-year cycle (angelfire.com). Producers targeting Muslim holiday markets, need to be aware of the cyclic nature of the Muslim calendar and, during certain cycles, may find it challenging to adjust their breeding and production periods accordingly.

The three primary Muslim observances that have the greatest impact on the demand for lambs in the region are: 1) Ramadan, a month-long period of reflection and daytime fasting, 2) Eid al-Fitr, the festival of the breaking of the fast, celebrating the end of Ramadan, and 3) Eid al-Adha, the festival of sacrifice commemorating Ibrahim's obedience and willingness to sacrifice his son Ishmael. (The Jewish and Christian traditions teach Abraham's obedience and willingness to sacrifice his son Isaac.) During recent years (1996-2001), both Easter and Eid al-Adha have occurred during either the month of March or April - thus increasing market competition for already limited supplies of lambs and making the individual effects of these holidays difficult to isolate. As the major Muslim celebrations cycle out of periods/seasons when lamb supplies are tight and into periods when lambs are more plentiful, holiday purchases will likely not have as great an impact on regional lamb prices as noted in 2001 and other recent years.

Major Christian, Jewish, and Muslim holidays relative to WV lamb marketings in 2001 are shown in Figure 14. The (+/-) symbols located beneath the name of each holiday or event indicate a positive or negative impact on regional purchases of lamb. (Rosh Hashanah and Yom Kippur decrease regional demand for 100-125 pound lambs as a major Kosher lamb plant in the region closes 2-3 days per week for a 4-week period during these holidays.)

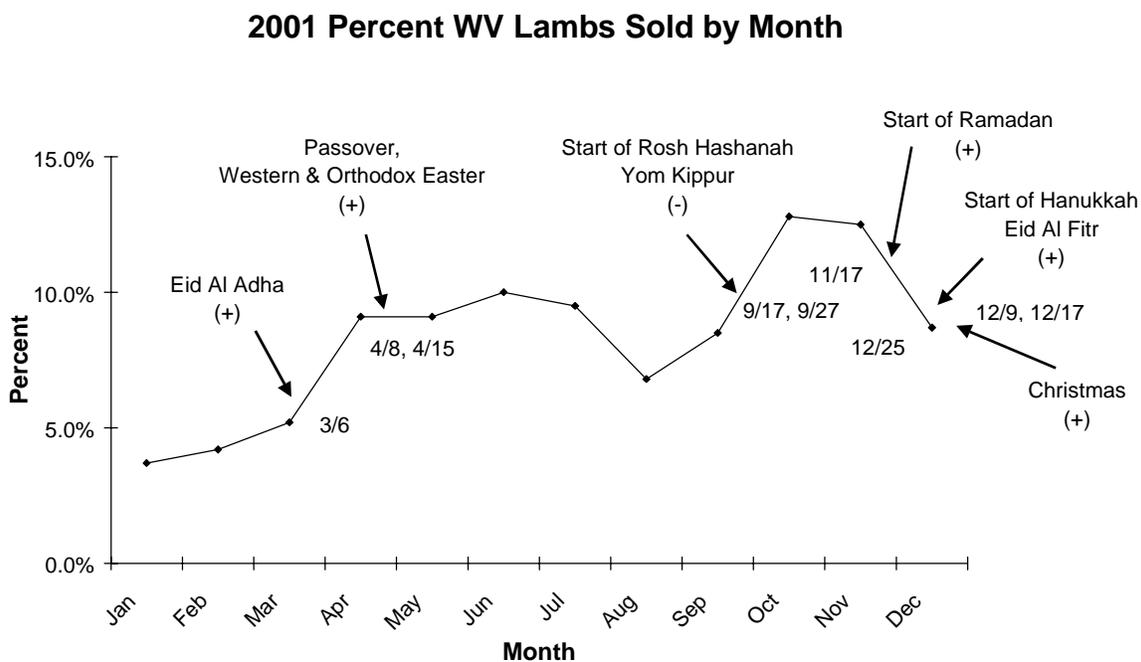


Figure 14.
Source: Survey

Producers should also be aware of the *general* ranges in weight (live) of lambs typically favored by regional Jewish and Muslim markets in terms of their impact, or potential impact, on lamb prices. In general, the Kosher market in the northeast region favors a 100-125 pound lamb and the Muslim market a 60-90 pound lamb. While not demonstrating cause-and-effect, it is, none-the-less, interesting to note the change in relative prices for these two weight categories of lambs sold through WV livestock markets during the period 1996-2001 (Figure 15). In 1996, the average price of 70-85 pound feeder lambs was less than 1 percent higher than the average price of 100-125 pound slaughter lambs. This price spread increased between 1996 and 2001 to a 16 percent difference. Increasing demand by the Muslim market for lighter-weight lambs in the region may have, in part, contributed to the increased spread.

Relative Prices (WV) for Feeder and Slaughter Lambs by Year 1996-2001

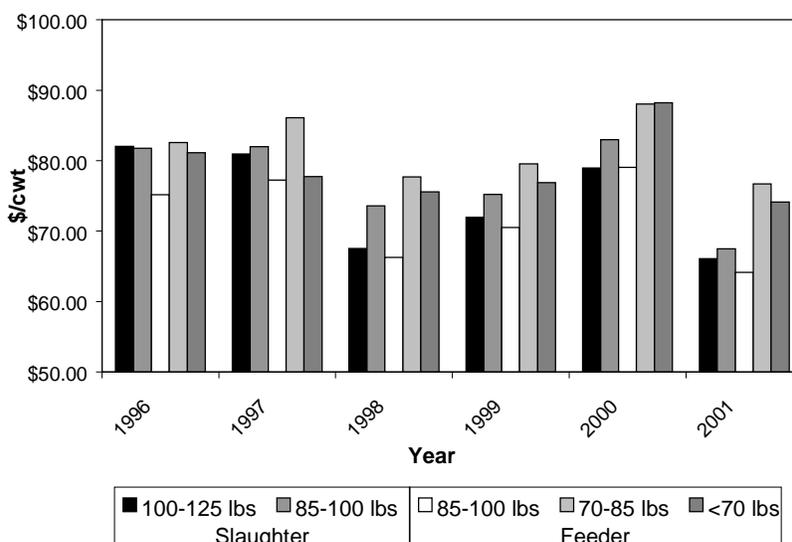


Figure 15.
Source: WVDA

Note that 85-100 lb feeder lambs brought *consistently* lower prices (\$/cwt) during the *entire* 1996-2001 period than did all other weight ranges of lambs - both slaughter and feeder (Figure 15).

F. Regional Prices

Limited data availability and state-to-state reporting differences conspire to make regional price analysis a challenge. Because it is the largest auction for lambs in the region, the New Holland, PA auction is of particular interest. Virginia lamb prices are also of interest because West

Virginia and West Virginia share similar production and marketing environments and because lamb production in the two states is concentrated along their common border.

Traditionally, many of the lambs raised on spring and summer pastures in WV were sold in the fall as feeder lambs - commonly leaving the state to be placed in feedlots for finishing prior to slaughter. It now appears that a relatively high percentage of WV lambs when marketed (both feeder *and* slaughter lambs) go directly to slaughter at one of the region's small slaughter plants - particularly during those periods of increased ethnic demand.

New Holland Sales Stables, Inc., in New Holland, PA, is the single largest auction for lambs in the region. New Holland serves a large regional ethnic trade, and does, in fact, generally report all lambs marketed as "slaughter lambs," regardless of weight and degree of finish. Both the WV and VA Departments of Agriculture routinely grade lambs offered for sale at local livestock auctions as feeder or slaughter lambs. The grades reflect both the weight of the lamb (live weight) and the anticipated carcass grade based on USDA standards. *In general*, "blue" lambs are slaughter lambs expected to grade USDA Prime or Choice, and "red" lambs are feeder or lower-yielding lambs expected to grade USDA Choice or Good (see Appendix E). The New Holland market makes no such distinction⁶. In addition, New Holland prices for April, 2000 through December, 2001, which includes the marketing period covered by the survey, were unavailable at the time of this writing. Each of these markets, WV, VA (Valley), and New Holland, report prices for slightly different weight ranges. Figure 16 shows four-year average prices (1996-1999) for similar weight ranges of lambs for WV markets, VA (Valley), and for New Holland. Note that WV 100-125 pound slaughter lamb prices tended to be lower than prices for similar-weight lambs in VA and New Holland. During this four-year period, New Holland prices also appeared to be higher than VA prices for similar weight lambs during the 1st, 4th, and much of the 3rd quarters.

Economic theory would indeed suggest a price advantage for the New Holland market. The New Holland livestock auction markets more lambs annually than do all WV livestock auctions *combined*. More lambs attract more buyers (and visa versa), which fosters competition and price discovery. *However*, for WV producers, prices at out-of-state markets such as New Holland, must be sufficiently higher than those at local markets to cover increased costs of transportation and shrink, and provide a profit margin. Otherwise, there is no economic incentive to ship lambs out-of-state to be marketed and no incentive for dealers to buy lambs at local markets and resell them at out-of-state markets.

⁶ The advisory board of the NESGMP has proposed that grading standards be developed for lambs and goats for the "special marketing conditions" that exist in the northeast. See Appendix E for the board's recommendations.

**Slaughter Lamb Prices at Selected Markets:
WV (All), VA (Valley), PA (New Holland)
(1996-1999)**

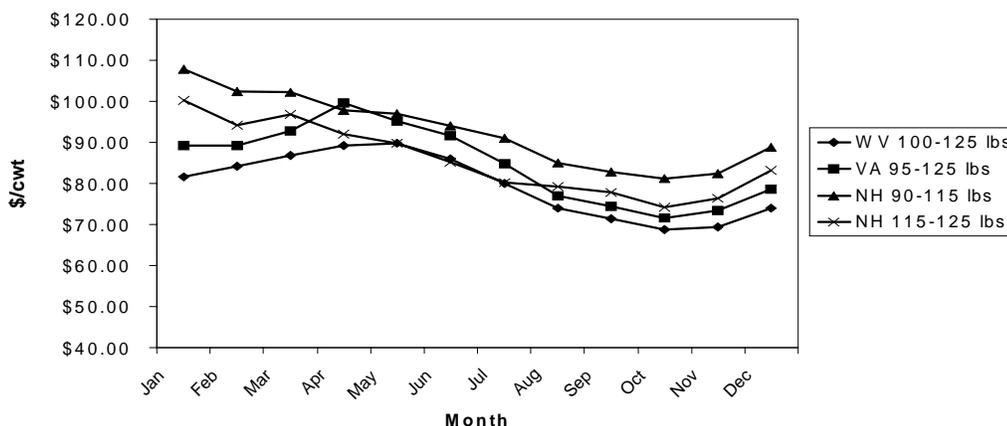


Figure 16.
Source: WVDA, VPI, NHSS

Figure 17 shows relative five-year average prices for various weight ranges of lambs marketed at New Holland (1995-1999). Figure 18 shows the number of lambs marketed annually through New Holland, PA as reported by New Holland Sales Stables, Inc. (1996-1999) and the total numbers of lambs marketed by Pennsylvania sheep producers (all market outlets) during that same four-year period (PA Agricultural Statistics Service). Note the jump in volume between 1997 and 1998 at the New Holland market that must be accounted for by lambs shipped in from producers out-of-state.

**Lamb Prices, Five-Year Average
New Holland, PA
(1995-1999)**

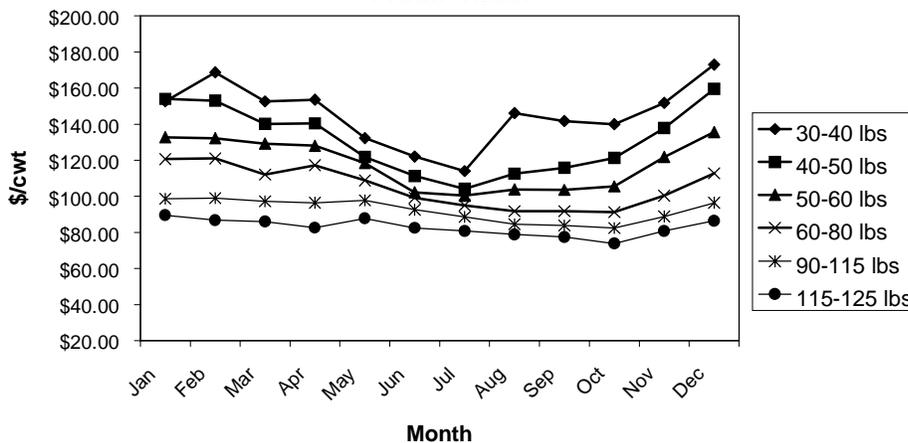


Figure 17.
Source: NHSS

**Number of Lambs Marketed by Pennsylvania Producers (PA)
& Number of Lambs Marketed Through NHSS
1995-1999**

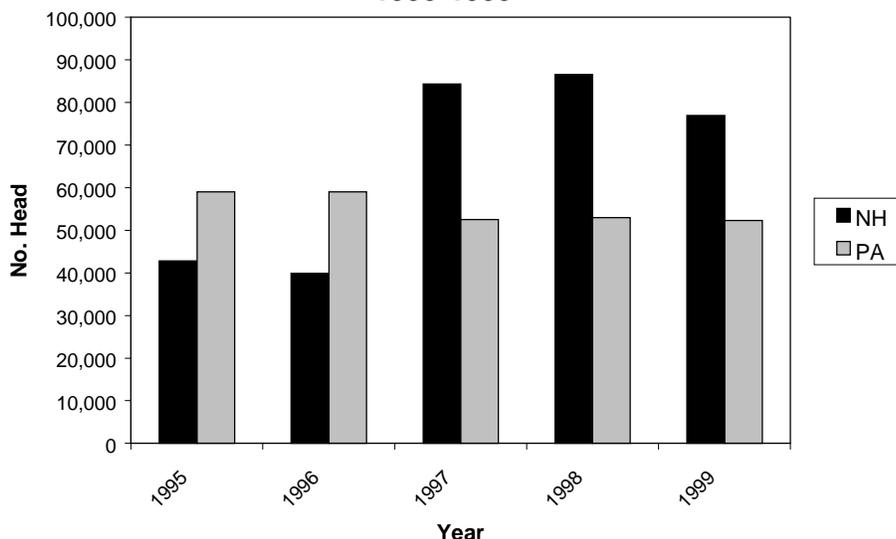


Figure 18.

Source: NHSS, PAASS

Of WV producers responding to the WV Lamb Marketing Survey, 32.6% sold lambs at an out-of-state livestock auction during 2001, representing 29.0% of the lambs marketed.

G. National Prices

Aggregate supply and demand affect the general level of feeder and slaughter lamb prices across the country and in turn, prices at regional and local auction markets. Feeder lamb prices are linked to seasonal supply, expected slaughter lamb prices, and feed grain prices. National average feeder lamb prices are seasonally highest December through May and lowest June through November. National average slaughter lamb prices are seasonally highest March through June, typically peaking just prior to Easter. Slaughter lamb prices generally decline during the summer months, reaching an annual low during the fall - typically in October.

WV feeder and slaughter lamb prices, in general, follow national trends. In 2001, both feeder and slaughter lamb prices in WV were consistently higher than the national averages (Figures 19a & 19b) except for December, 2001, when the WV slaughter lamb price slipped just under the national average. It is important to note that the national average weight for slaughter lambs was 135 pounds in 2000 and 142 pounds in 2001 (see Figure 33). WV slaughter lamb prices were for somewhat lighter slaughter lamb weights - ranging from 100 to 125 pounds - which generally will have an impact on relative price differentials.

**WV and National Average Feeder Lamb Prices
2000-2001**

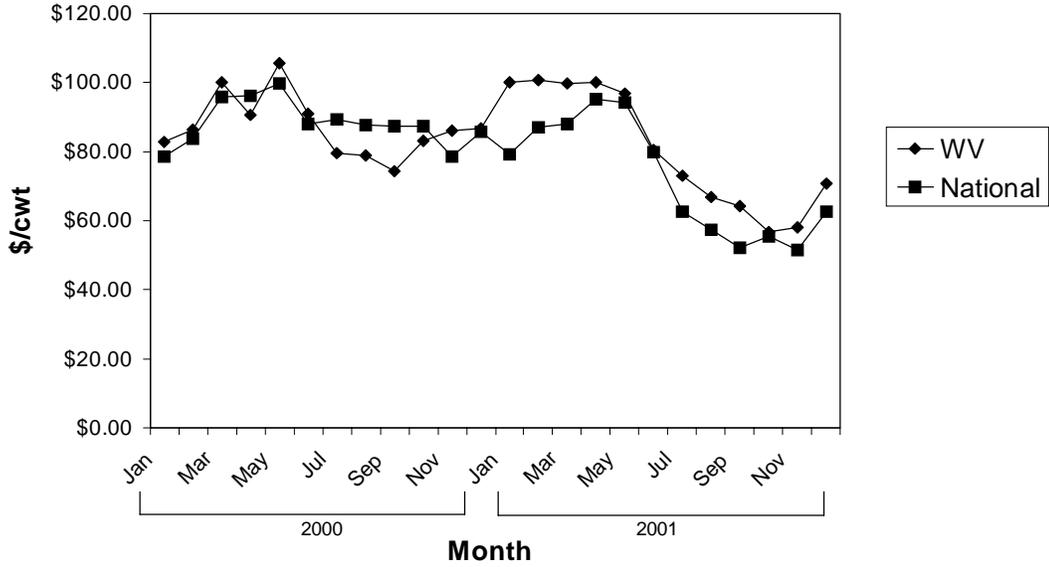


Figure 19a.
Source: WVDA, USDA/AMS, ASI

**WV and National Average Slaughter Lamb Prices
2000-2001**

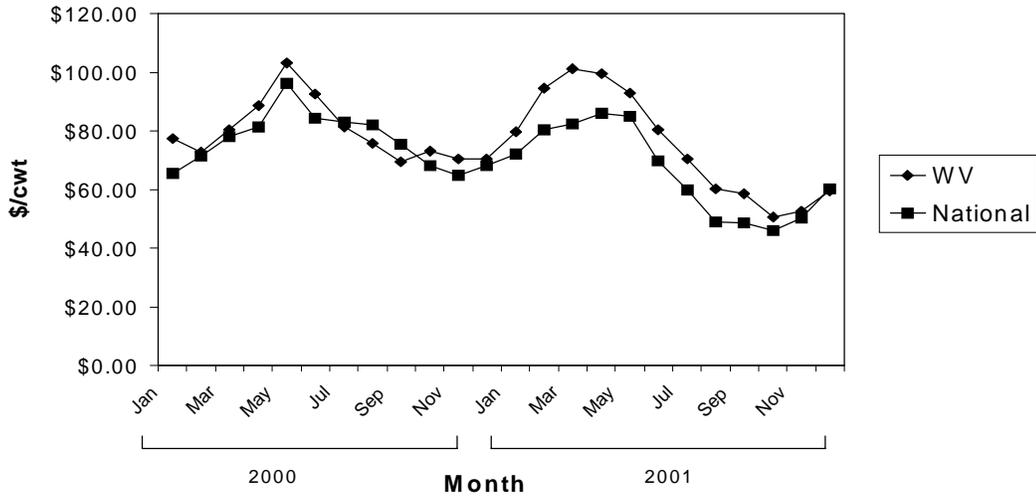


Figure 19b.
Source: WVDA, USDA/AMS, ASI

H. Wholesale Prices

In the wholesale trade, the wholesale price for racks is generally higher than prices paid for loins, and both racks and loins command higher prices than legs (Figure 20). There are multiple market outlets for racks, including restaurants, supermarkets, and food service. Rack prices are generally supported by strong restaurant demand. Supermarkets are the major outlet for loins. Legs and shoulders generally are marketed through supermarkets as well as through food service outlets.

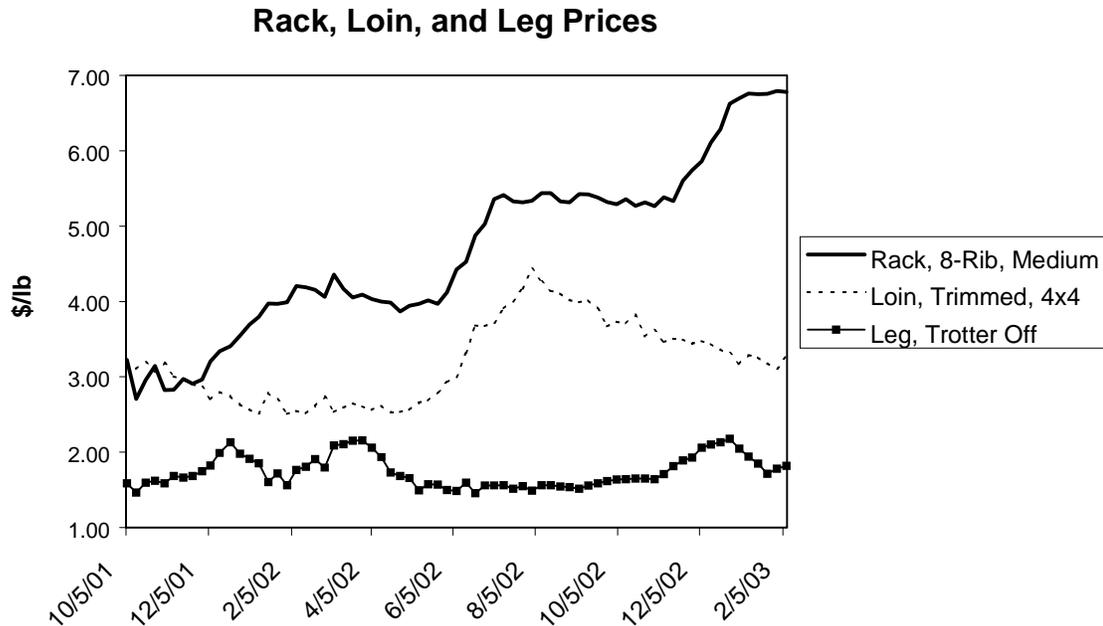


Figure 20.
Source: USDA/AMS, ASI

Imported lamb carcasses are lighter than U.S. carcasses and whole-muscle cuts, imported or fabricated from imported carcasses, are smaller and less versatile than similar cuts of American lamb (based on the national average weight for all U.S. slaughter lambs). In most high-end U.S. markets, these larger cuts of American lamb command price premiums over the smaller imported cuts. The larger U.S. leg, for example, can be fabricated into a number of retail cuts including hind-shank, top round, and sirloin cuts and still provide a very acceptable portion-controlled boneless leg roast of about the same size (weight) as an imported leg roast. Table 3 gives a comparison of the approximate weights (pounds) of a number of retail cuts from American, New Zealand, and Australian lambs based on a recent study conducted by Colorado State University (Genho and Schmidt, 2002).

Table 3. Comparison of Approximate Retail Cut Weights (lb) for American, New Zealand, and Australian lambs.

Retail Cut	Approximate American lamb retail cut weights	Approximate New Zealand lamb retail cut weights	Approximate Australian lamb retail cut weights
Boneless Shoulder	3.3-6.7	2.8	1.6-2.2
Frenched Rack	1.9-3.7	1.0-1.2	1.1-1.6
Boneless Loin	0.5-1.3	NA	NA
Tenderloin	0.1-0.4	NA	0.1-0.2
Boneless Leg	4.1-7.3	NA	NA
Bone-in Leg	5.7-9.8	4.5	3.5-4.8

Source: Genho & Schmidt, 2002

As part of the 201 Domestic Lamb Industry Adjustment Assistance Program (DLIAAP), the USDA authorized Section 32 purchases of lamb shoulder and leg roasts for distribution in federal food and nutrition programs. During the three-year period, February, 2000-03, USDA/AMS purchased 5,400,000 pounds of shoulder and leg roast at a total price of \$20,568,000. Section 32 lamb roast purchases have been successful in moving seasonal over-supply out of the marketplace when needed. (Note: The USDA is the single largest purchaser of meat in the U.S.)

I. Retail Prices

In 1981, the USDA stopped reporting the retail price for lamb as an individual commodity. And, until January, 2003, when the Economic Research Service (ERS) began publishing retail lamb prices based on supermarket scanner data, no consistent retail price series for lamb meat has been publicly available. The new USDA/ERS lamb retail price series is derived from scanner data from supermarkets across the country, which together represent about 20 percent of U.S. supermarket sales. Prices are reported for "all lamb", "domestic lamb", and "imported lamb". The price data include a feature-weighted average price (\$/lb), volume index, and percent of volume sold under featuring (price specials/discounted sales). This long-needed retail pricing information should provide a more effective and accurate indicator of consumer demand and facilitate more efficient communication from the retail/consumer sector, through the marketing and processing sectors, and back to the producer.

The ERS retail price series lends credence to industry concerns that imported lamb is priced consistently below domestic product (Figure 21). The difference, however, may actually be somewhat understated in the ERS price data because "domestic lamb", as reported, may include some USDA-graded imported carcasses and fabricated imported product. Pending mandatory Country of Origin Labeling should provide consumers with better information about their lamb meat purchases - differentiating more clearly and more precisely between American and imported lamb⁷.



Figure 21.
Source: USDA/ERS

In 2001 and 2002, weighted average retail prices of domestic lamb were \$4.28 and \$4.33 per lb., respectively. The weighted-average retail prices of imported lamb were \$3.84 and \$3.93 per lb., respectively. The average monthly price difference between domestic and imported lamb for 2001-2002 was \$0.29 per lb.

⁷ Voluntary guidelines for Country of Origin Labeling (COOL), published by USDA/AMS, went into effect October 11, 2002. Mandatory COOL is set to go into effect October 1, 2003. COOL applies to whole muscle cuts, ground product, fresh or frozen product. The rule exempts products where lamb is an ingredient or where it has been materially changed - i.e. where the identity of the product has been changed. For example, lamb pita meat, ground lamb with added ingredients, and ground lamb that is further processed are exempt.

Figure 22 shows the relative monthly volume of retail sales based on a volume index. Note the seasonal pattern that is again demonstrated by the volume index. Retail sales increased significantly in April 2001 (Easter = April 15) and March 2002 (Easter = March 31). Retail sales showed a slight increase in December 2001 and 2002, in association with the Christmas holidays.

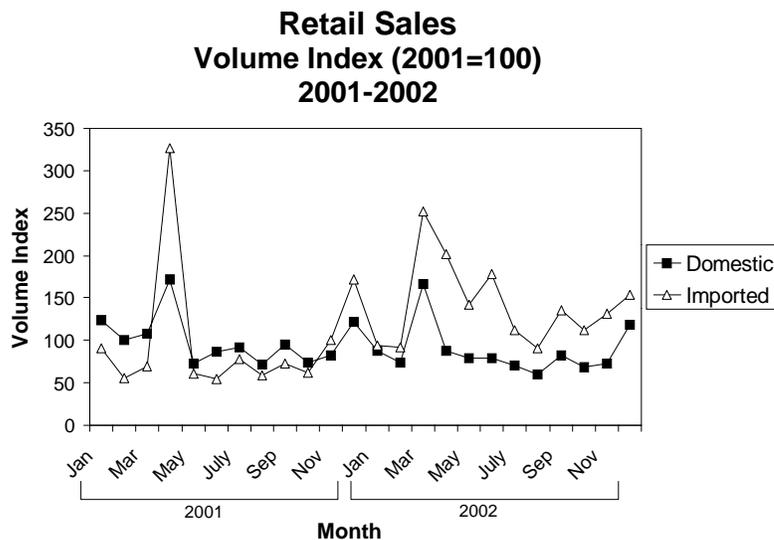


Figure 22.
Source: USDA/ERS

On a percentage basis, more imported lamb than American lamb was discount featured in 2001 and 2002. Although the mix of higher versus lower value cuts can not be delineated from the ERS data, retail sales of imported lamb appear to be more price-sensitive (elastic) than sales of domestic lamb (Figure 23). Taken together, this information may indicate that the U.S. consumer considers American lamb to be a higher-value product than imported lamb.

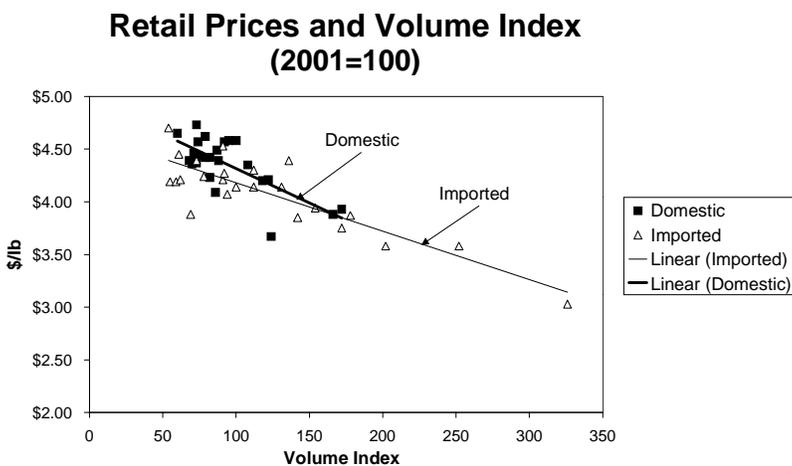


Figure 23.
Source: USDA/ERS

J. Farm-to-Retail Price Spreads

Farm-to-retail price spreads are a frequent source of frustration for many producers. Most producers never gain an accurate appreciation of the actual retail value of the products that are produced from their lambs. This is due in part to the fact that lamb meat is primarily sold in large metropolitan areas concentrated in the northeast and along the west coast. In addition, the high-end hotel, restaurant, and institution (HRI) trade captures a relatively large share of domestically produced lamb. The higher-value achieved in the HRI trade is difficult to quantify as the lamb meat entrée becomes part of a complete menu offering.

Price spreads provide an indicator of the value added to the lamb product as it moves along the processing, distribution, and marketing chain. Price spreads also reflect the profit margin extracted for each of these functions, provide a measure of cost-efficiency, and reflect the level of risk that must be absorbed by each sector. In general, each sector of the production-to-marketing continuum is margin-sensitive and positioned to be a margin-taker - except for the producer, who is generally forced to be a price-taker.

Although retail, wholesale, slaughter lamb, and feeder lamb prices are, predictably, related, prices in each sector do not necessarily move together. Feeder lamb prices may be more closely tied to movements in corn prices than to slaughter lamb prices. Middlemen - packers, wholesalers, and retailers - may absorb changes in price such that slaughter lamb prices and consumer retail prices do not move together (SID, 2002). Wholesale or carcass prices may not be representative of the collective national slaughter as the carcass trade consists of a relatively small percentage of slaughter lambs and weights tend to be heavier than the average of all slaughter lambs (Shiflett, 2002). Thus, price movements in one sector may not be fully elucidated in the other sectors.

For example, consider relative movements in the retail price of domestic lamb (meat) and U.S. slaughter lamb prices during 2001 (Figure 24). Slaughter lamb prices dropped dramatically during the second half of 2001, whereas retail prices remained comparatively stable. The drop in the price of slaughter lambs was not reflected in the retail meat case and represented increased profit margins for the processing sector during the third and fourth quarter periods. In addition, if retail prices for domestic lamb are, in fact, relatively inelastic as the initial ERS data indicate, price increases for slaughter lambs would be difficult to pass along to the retail customer. On-the-other-hand, the more elastic nature of imported lamb, allows increases in tonnage to be moved more readily at discounted prices⁹.

⁹ "Demand" is a price quantity relationship. Demand for lamb is the quantity that consumers are willing and able to purchase at various prices. If demand is elastic in a relevant range of prices, then price and total revenue vary inversely (i.e. a price increase will decrease total revenue, and a price decrease will increase total revenue). On-the-other-hand, if demand is inelastic in a relevant range of prices, then total price and total revenue vary directly - a price increase will increase total revenue and a price decrease will decrease total revenue (Tomek and Robinson, 1990). A misconception, frequently held by producers, is that simply lowering retail prices for American lamb will not only help sell more product, but also provide increased profits. When demand is inelastic, this type of marketing strategy is not an appropriate means to increase profitability.

2001 Domestic Lamb Retail Prices vs U.S. Slaughter Lamb Prices

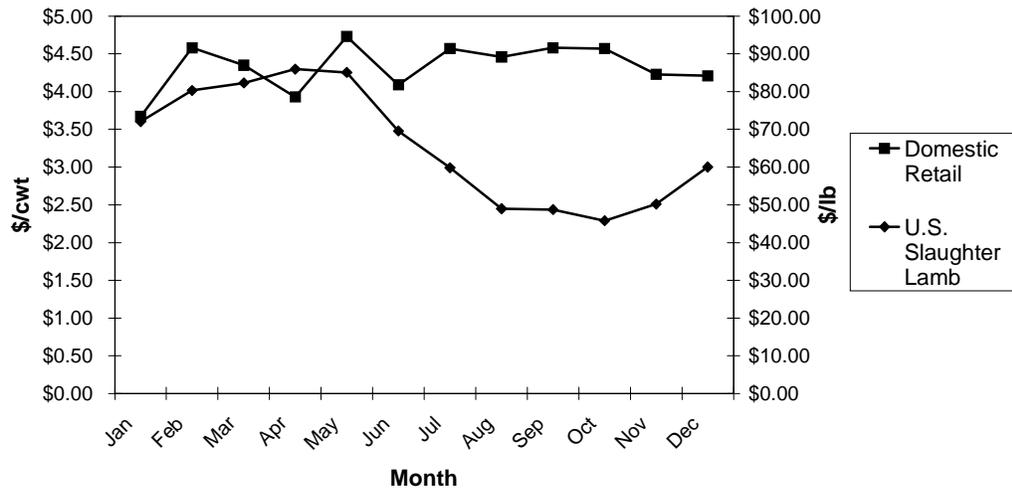


Figure 24.
Source: USDA/ERS, USDA/AMS, ASI

K. Imports

Since the early 1990s, imports of lamb meat from Australia and New Zealand have increased dramatically (Figure 25). In 1990, imports of lamb represented only about 8 percent of annual supplies. By 2001, imports reached 33 percent of total U.S. annual supplies (Figure 26).

**Annual Lamb Imports
1990-2001**

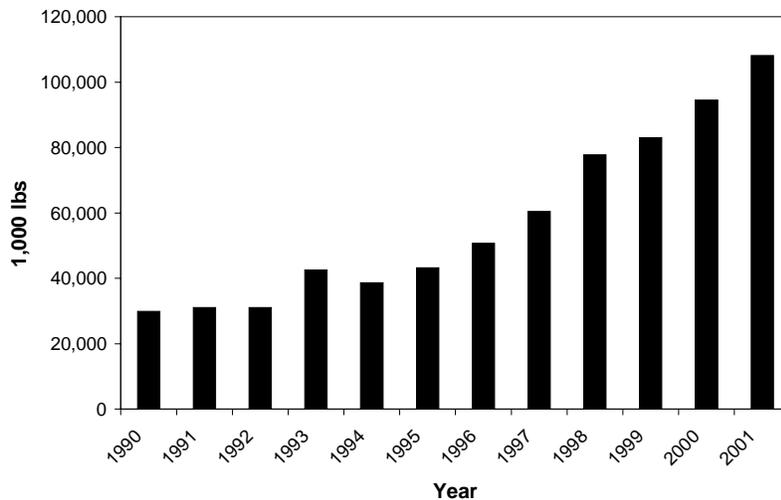


Figure 25.
Source: USDA/ERS, ASI

**Imports as a Percent of Total
U.S. Annual Supplies
1990-2001**

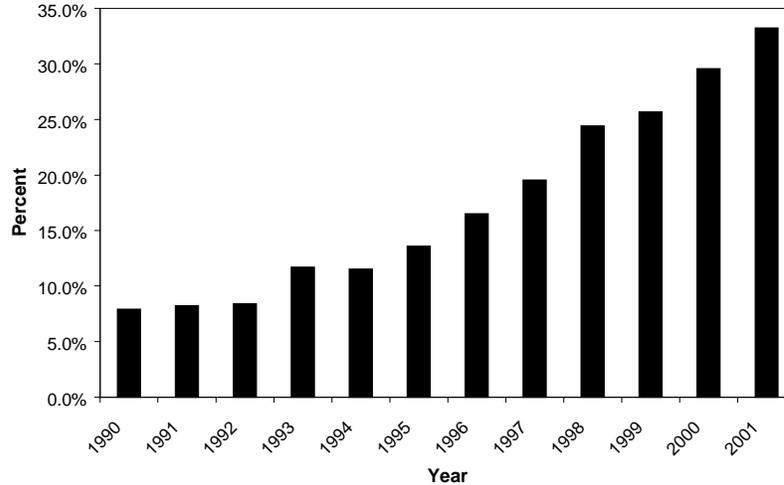


Figure 26.
Source: USDA/ERS, ASI

In 1999, the U.S. sheep industry won a Section 201 Trade Action against imports of Australian and New Zealand lamb. During the 18-month period of their investigation, the U.S. International Trade Commission (ITC) found that Australian and New Zealand lamb was priced under U.S. lamb in 79 percent of instances where comparisons were possible, with margins of underselling averaging between 20 and 40 percent, including some as high as 72 percent (ITC, 1998). The Commission ruled that low-priced lamb imports threatened a substantial cause of serious injury to the U.S. lamb industry. In response, the sheep industry was awarded a three-year period of relief under the Clinton administration which included a two-tiered Tariff Rate Quota Program and a \$100 million Lamb Meat Adjustment Assistance Package (LMAAP).

The intended impact of the tariff rate quota was never fully realized in the lamb industry because the currency exchange rate during the relief period continued to make the U.S. an attractive market for imports. The tariff was removed six months prematurely under the Bush administration. However, the industry was awarded an additional (fourth) year of LMAAP funding (\$42.7 million). Lamb meat does not receive protection under the Meat Import Act as do beef and pork, and the period from July, 1999 through November, 2001 marks the only time that Australian and New Zealand lamb imports have met significant restricted access to the U.S. market.

Figure 27 shows U.S. production and imports on a carcass equivalent basis for 2001. Annual import levels reached nearly 50 percent (49.8%) of domestic production in 2001.

2001 U.S. Lamb Production and Imports (Carcass Equivalent)

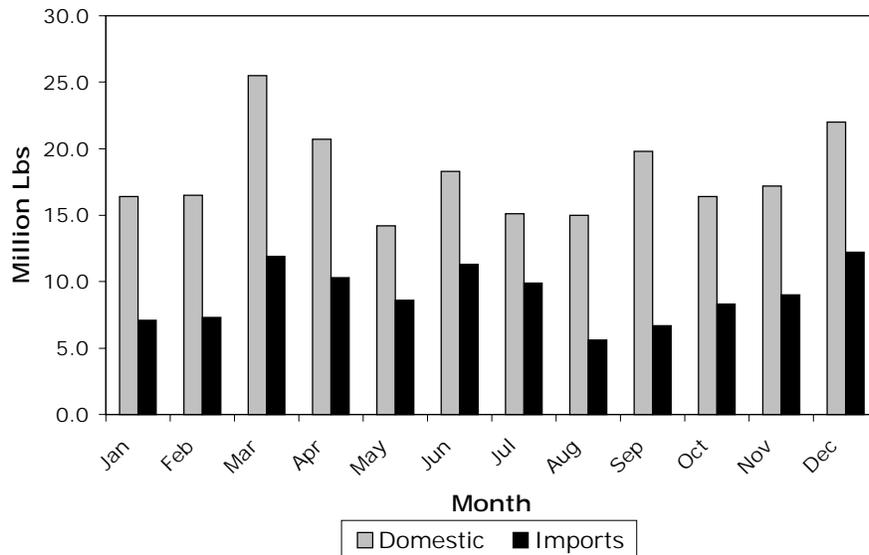


Figure 27.
Source: USDA/ERS, ASI

L. LMAAP

The 201 Lamb Meat Adjustment Assistance Package targeted four key areas all aimed at supporting the long-term development and growth of the U.S. sheep industry and at improving the industry's competitive position in the global marketplace. The four key areas included: 1) productivity improvements, 2) market promotion, 3) animal health, and 4) federal purchases of excess lamb meat.

Expenditures targeting productivity improvements included direct cash payments to producers tied to production practices and quality incentives. The original three-year program (July 21, 1999 - July 31, 2002) was later extended to include a fourth year of direct producer payments (August 1, 2002 - July 31, 2003). Payment types for year one of the program included a ram incentive payment, sheep improvement payment, and facility improvement payment. Payment types for years two, three and four included feeder and slaughter lamb incentive payments and a bonus slaughter lamb incentive payment for lambs meeting the slaughter lamb criteria and marketed between June 1 and July 31. Years three and four payments also included a replacement ewe lamb incentive payment.

Through March 21, 2001, West Virginia sheep producers received \$133,302.26 in direct 201 LMAAP payments. U.S. producers received \$16,400,418.84 in direct 201 LMAAP payments during that same period. (Updated payment figures pending.)

M. Marketing and Promotion

As part of the three-year 201 LMAAP, USDA/AMS awarded approximately \$4.85 million in lamb marketing grants. The grants targeted a wide range of marketing and promotional initiatives. The American Lamb Council was awarded \$1.8 million to develop a new seal/logo for American lamb, conduct targeted retail promotion, conduct culinary outreach, develop a lamb information center, and conduct a consumer positioning campaign. Other grant initiatives included the development of criteria and a grid for value-based marketing, development of a number of value-added products, regional marketing campaigns, and the establishment of Cornell University's Northeast Sheep and Goat Marketing Program, among others.

The American Lamb Council worked closely with a major advertising and public relations firm to develop and implement its five initiatives aimed at building awareness and increasing demand for American Lamb. The agency conducted extensive background research to identify and define the best target consumer audience (*"fish where the fish are"*), to identify consumer's perceptions and attitudes toward lamb, and to identify consumption patterns and selection of lamb relative to other meats. Of consumers interviewed, in each of four major markets, New York City, Chicago, Phoenix, and San Francisco, the research showed that 76 percent were confused about where lamb sold in the U.S. was produced. Most consumers thought that lamb came from New Zealand (U.S. was second) and yet, these consumers indicated a strong preference for American Lamb.

The research indicated that lamb purchases are correlated with age and income, that consumer familiarity with cuts of lamb is limited primarily to the more traditional chops and leg of lamb, and that consumers tend to associate lamb with holidays and upscale restaurants. Based on a sample population of nearly 52,000 consumers, six "smart targeting" segments were identified and profiled (Figure 28).

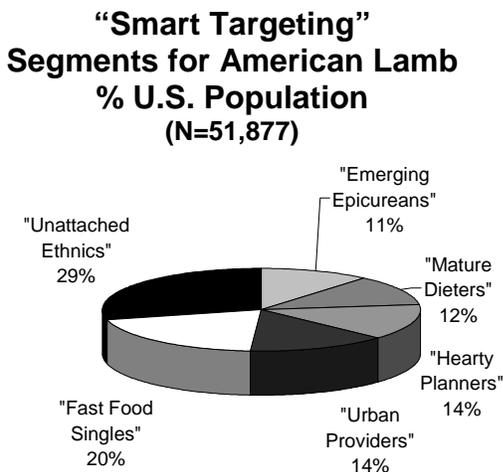


Figure 28.
Source: ASI/ALC

The research showed that only 11 percent of the population consumed 31 percent of the lamb (Figure 29). This 11 percent were dubbed the "Emerging Epicureans." Emerging Epicureans are mostly 40-60 years old, married with grown children, mostly suburban, in a high- income bracket, they enjoy cultural activities, and entertain friends and dine out often⁹. The Emerging Epicureans are a primary “smart targeting” consumer segment for American Lamb promotions (ALC, 2002).

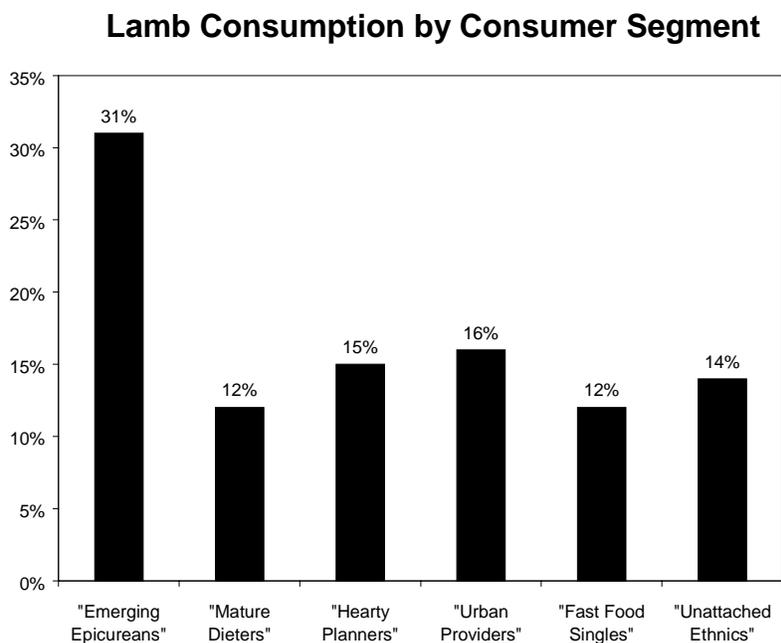


Figure 29.
Source: ASI/ALC

The type of lamb required for the Emerging Epicurean market is different from the type required by the ethnic markets discussed earlier. Lambs best suited for this market are high quality lambs, generally weighing 120+ lbs, YG 2-3, with a 2.5+ inch rib eye. AND, these are *not* just "western lambs". One sheep producer in southwestern Pennsylvania who has worked with WVU to develop his out-of-season breeding program, direct markets lamb produced on his PA farm exclusively to top restaurants across the country. (See article: Martinson, 2000).

⁹ This consumer profile tends to agree with the findings of several earlier industry studies. Ward et al. (1995) and TAMRC (1991) reported that nearly three times as many lamb consumers last ate lamb at a restaurant as compared to eating lamb at home. Ward also found that older married consumers with some college education ate more lamb. Shelton and Rodgers (1998) stated that the demand for lamb can be classified as “specialty demand,” such that a portion of the population will seek out and purchase lamb at any price (inelastic demand).

N. American Lamb Check-off

An industry-wide check-off program intended to raise funds for market promotion, research, and information activities for American lamb went into effect July 1, 2002. This is the first national program of its type initiated by the industry to specifically promote American Lamb and American lamb products.

Producers, feeders, and packers all contribute to this industry-wide "self-help" program. The program is expected to raise approximately \$3 million per year to fund promotion, research, and information programs. Domestic lamb producers, feeders, seed stock producers, and exporters contribute one-half cent (\$.005) per pound of live lamb sold. In addition, first handlers, primarily packers, are assessed 30 cents (\$.30) per head of lambs purchased by the first handler for slaughter. Lamb importers are not assessed.

The 13-member board of directors, which was appointed by the U.S. Secretary of Agriculture, includes six producers and three feeders representing regions east and west of the Mississippi River, three packers, and one seed stock producer. Mr. Joe Harper, a sheep producer and lamb feeder from Seneca Rocks, WV, was appointed to the inaugural board as a feeder representative for the eastern region.

The new American Lamb Board is charged with the establishment and administration of specific check-off-funded programs designed to develop, maintain, and expand domestic and foreign markets and uses for American lamb and American lamb products. The Board has elected to continue and build upon the successful *Meat Lovers Know*TM promotional campaign developed for the American Lamb Council as one of the industry's 201-funded initiatives for marketing and promotion.

III. Marketing Preferences

A. Average Market Age

WV producers were asked at what age they prefer to sell their lambs. Table 4 shows the average age that WV producers indicated they prefer to market lambs (target market age). Over half (56.1%) of producers prefer to sell lambs at 3 to 6 months of age.

Table 4. Target Market Age

Age of Lambs	Percent of Farms
Under 3 months	8.3%
3-6 months	56.1%
7-9 months	33.7%
9-12 months	5.3%
Over 12 months	0.7%

Source: Survey

B. Average Market Weight

WV producers were also asked at what weight they prefer to sell their lambs. The largest percentage (36.4%) of WV producers preferred to market lambs in the 91-105 pound weight range, followed by the 76-90 pound range (27.7%), and the 106-120 pound range (17.4%) (Figure 30). Only 3.7% of operations preferred to market lambs over 120 pounds.

Target Market Weight

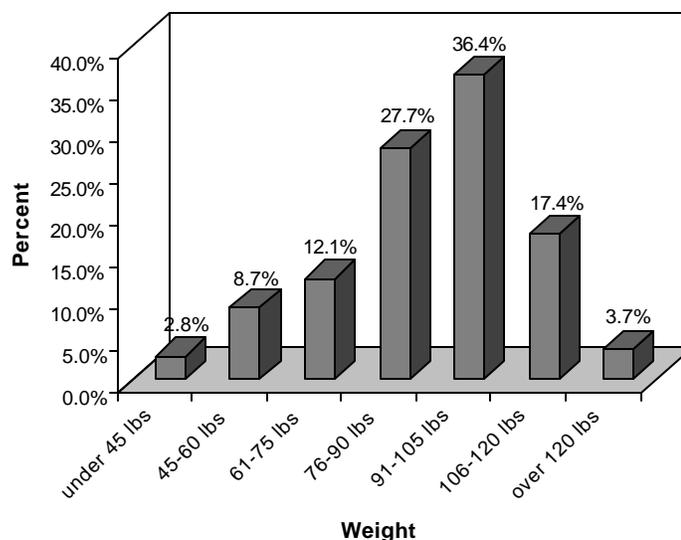


Figure 30.
Source: Survey

The actual average annual supply at WV auctions by weight category of lambs for 2000 and 2001 is shown in Figure 31. In 2001, 62% of the lambs marketed through WV livestock auctions were marketed as slaughter lambs and 38% as feeder lambs.

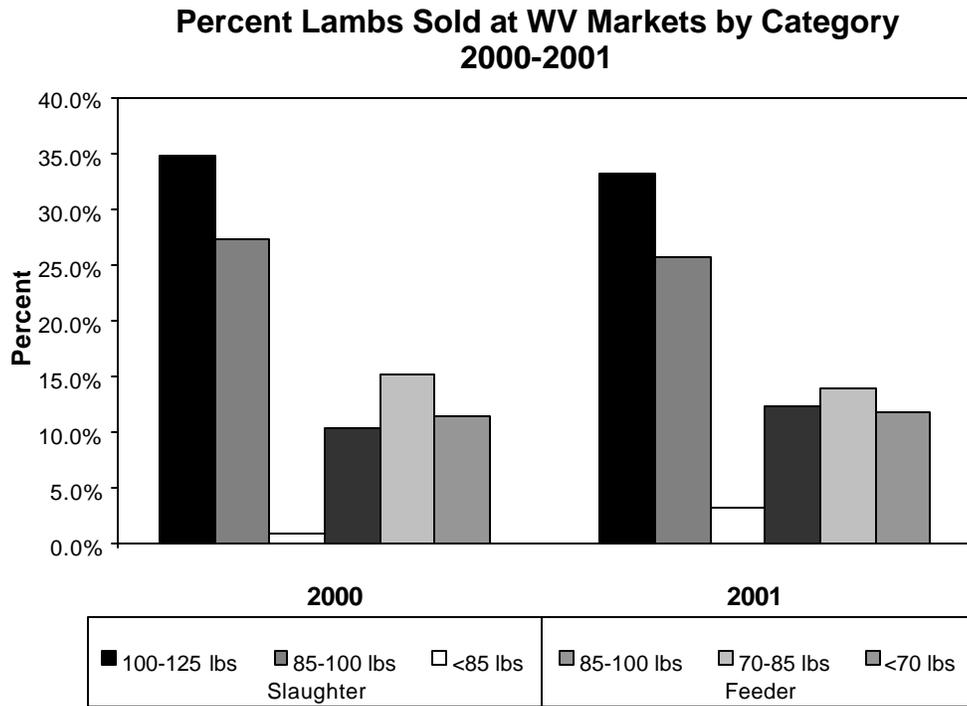


Figure 31.
Source: WVDA

Table 5 shows some typical market lamb live-weight preferences for selected eastern markets.

Table 5. Typical Market Lamb Live Weight Preferences for Selected Eastern Markets

Market	Weight Preference
Italian	35-45 lbs
Greek	45-60 lbs
Muslim	60-90 lbs
Restaurant	80-100 lbs
Freezer Lamb	100-120 lbs
Kosher (use forequarters only)	100-125 lbs
Wholesale	120+ lbs

Source: Adapted from NESGMP

IV. Regional Slaughter

The WV Department of Agriculture, Meat and Poultry Inspection Division provides ongoing inspection of 29 commercial slaughter and processing facilities and periodic inspection of 38 custom plants in WV. Of the state-licensed commercial slaughterhouses, 13 plants (12 state-inspected and one federally inspected) slaughter sheep/lambs (See Appendix F). Only about 200 sheep/lambs were slaughtered under WV state-inspection at commercial operations during FY01-02. Annual federally inspected (FI) slaughter data is not publicly available for WV to avoid disclosing data for an individual operation. Each of the 12 WV state-inspected plants is approved for religious slaughter. Meat from commercial state-inspected establishments can be offered for sale in intrastate commerce only.

U.S. FI slaughter of sheep and lambs for 2001 was over 3 million head (3,055,600). Regionally, 56,700 sheep and lambs were slaughtered under federal inspection in Pennsylvania, 7,300 in Virginia, 114,000 in New Jersey, 22,400 in New York, and 26,700 in Maryland/Delaware during 2001. Add the six New England states (CT, ME, MA, NH, RI, VT) at 23,100 head, and the FI sheep and lamb slaughter for the entire northeast region still represents only about 8 percent of the total annual U.S. FI slaughter (Figure 32). Note however, that FI slaughter numbers in the region have increased as a percentage of total annual FI slaughter.

**NE Regional Slaughter as Percent of Total U.S.
Slaughter at Federally Inspected Plants
1994-2001**

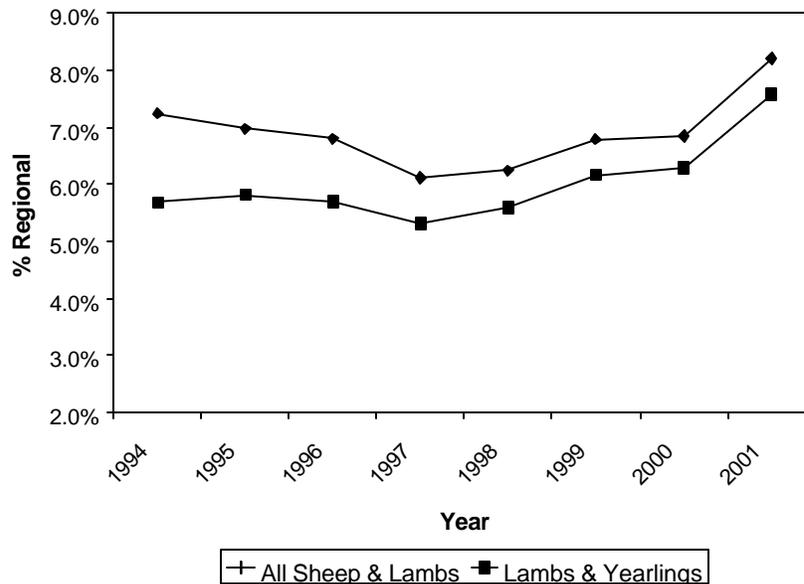


Figure 32.
Source: USDA/NASS

The NESGMP provides a searchable directory of FI slaughter facilities in the region, including a brief business profile and contact information www.sheepgoatmarketing.org

Nationally, the percentage of sheep and lambs slaughtered under federal inspection decreased between 1999 and 2002.

"While the decrease from 96.1 percent in 1999 to 94.38 percent in 2002 may appear to be slight, it is predicted that this trend will continue into 2004. This shift in slaughter distribution may suggest that the industry is seeing some sort of change in how sheep and lambs are being marketed. It indicates that producers could possibly be supplying lamb directly to alternative markets. These markets include sales to ethnic populations to meet religious demands and cultural tastes, as well as the increase in smaller flocks that can more easily meet such cultural and individual demands." (ASI Weekly, Feb. 21, 2003).

There are a large number of custom slaughter facilities in the northeast region, including WV, that custom-kill lambs which are not captured by USDA reports. In addition, lambs sold for sacrificial slaughter in the region are not captured in any official reports. Actual regional slaughter numbers including FI slaughter, state-inspected slaughter, custom slaughter, and sacrificial slaughter, may well account for a larger percentage of the national slaughter than USDA reports appear to indicate.

The average annual live weight of lambs slaughtered under federal inspection in the region is consistently lower than the national average (Figure 33). In 2001, the average slaughter weight of all lambs (U.S.) slaughtered under federal inspection was 142 pounds. In 2001, the average live weight for lambs slaughtered under federal inspection was 102 pounds in PA, 100 pounds in VA, 94 pounds in NJ, and 92 pounds in NY (WV data is not available). The lighter slaughter weights likely reflect not only the lack of a well-developed feedlot industry in the region, but also the impact of some of the regional ethnic markets. In addition, poor market information during 2001 exacerbated problems with over-finished lambs at the national level. In 2002, the national average live weight for slaughter lambs returned to the 2000 level of 135 pounds.

Average Annual Live Weight of Lambs Slaughtered at Federally Inspected Slaughter Plants in the US and NJ, NY, PA, and VA 1994-2001

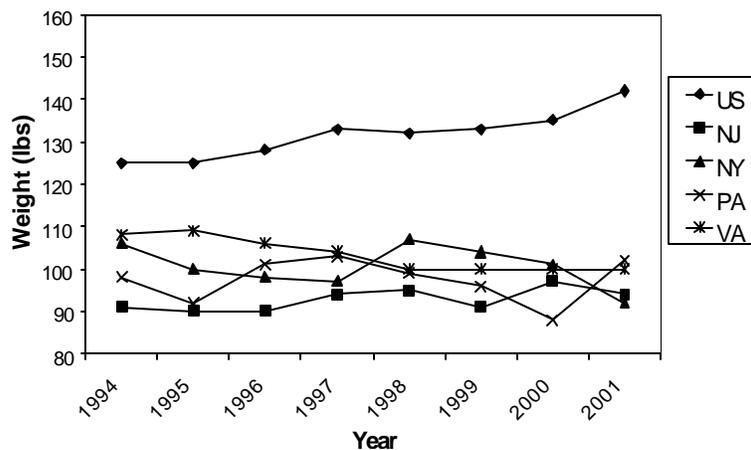


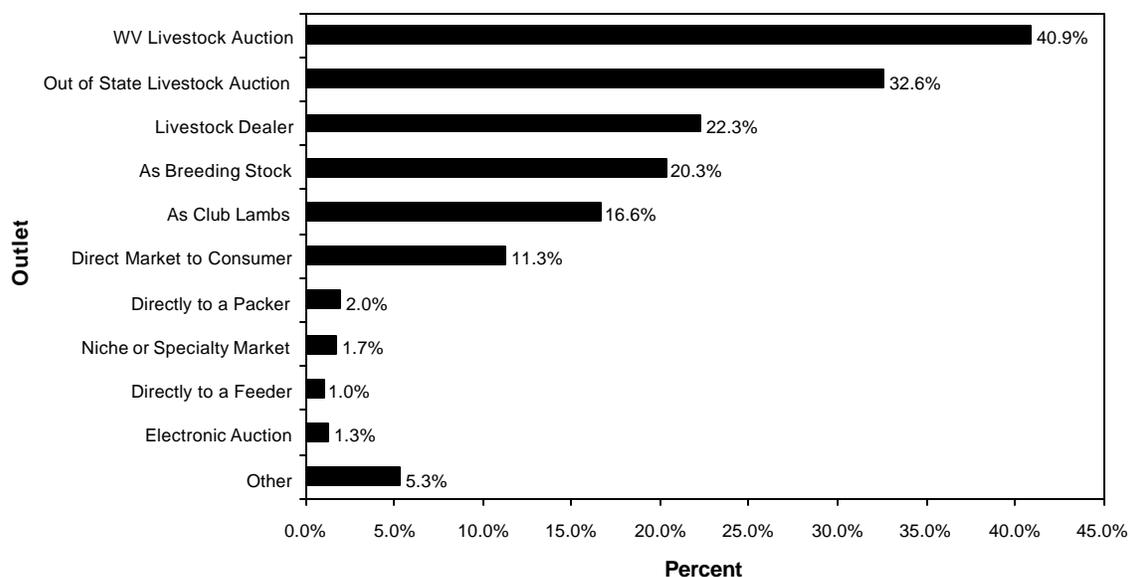
Figure 33.
Source: USDA/NASS

v. Market Outlet

The survey showed that nearly 41% of WV operations marketed lambs through a WV livestock auction, followed by 32.6% through an out-of-state livestock auction, and 22.3% through a livestock dealer (Figure 34). This represents approximately 25.3%, 30.0%, and 27.5% respectively of lambs marketed (Figure 35). In 2001, more WV lambs were marketed through out-of-state livestock auctions than through in-state auctions.

A. By Operation

Percent Operations That Sold Lambs by Market Outlet



*Total is greater than 100% as some operations reported multiple marketing outlets.

Figure 34.
Source: Survey

B. By Lambs Marketed

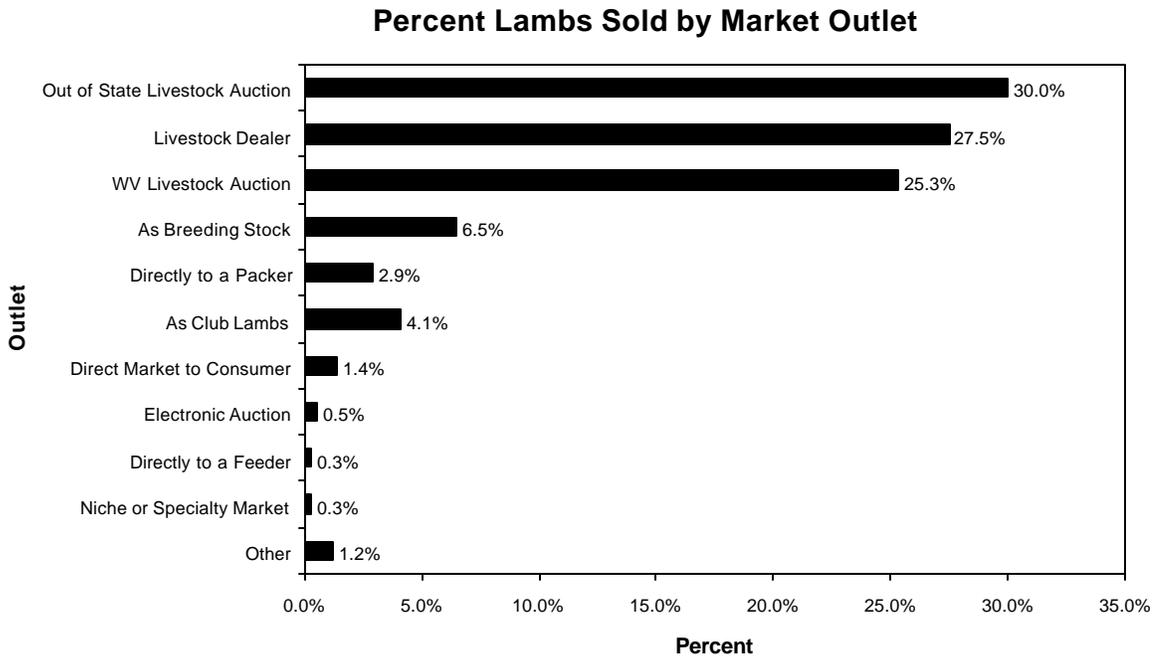


Figure 35.
Source: Survey

C. National Estimates (2000)

National estimates for non-feedlot operations that sold lambs during 2000 by percentage of operations and percentage of lambs sold are shown in Table 6. Nationally, 56.8% of operations and 28.5% of weaned lambs were sold at an auction market or salebarn compared to 73.5% and 55.3%, respectively for WV (in-state plus out-of-state auctions) in 2001. (Note: only 1.6% of WV operations reporting lambs sold through a livestock auction sold lambs through both a WV auction and an out-of-state auction.) Direct sales to a buyer/dealer accounted for 22.0% and 27.5% of the lambs sold nationally (2000) and by WV operations (2001), respectively. Eighteen percent of U.S. operations and 22.3% of WV operations sold lambs directly to a livestock buyer/dealer. Nationally (2000), 20.1% of the lambs sold by non-feedlot operations were sold to a feedlot operation or to a backgrounder (non-feedlot feeder) and 22.0% of lambs were sold directly to a packer. For WV (2001), only 0.3% of lambs were sold directly to a feeder and 2.9% were sold directly to a packer.

Table 6. National Estimates for Non-feedlot Operations (2000) (Percent Operations and Percent Lambs Sold by Method Sold)

<u>Method Sold</u>	<u>% Operations</u>	<u>% Lambs Sold</u>
Auction market/salebarn	56.8	28.5
Direct to buyer/dealer	18.0	22.0
Direct to feedlot	5.5	16.7
Direct to backgrounder	1.4	3.4
Direct to slaughter/packer	15.1	22.0
Direct to consumer or ethnic market	13.9	3.5
Other	13.4	<u>3.9</u>
Total		100.0

Source: NAHMS

VI. Marketing Influences

Producers were asked to indicate the degree of influence (strong, moderate, weak, none) that various factors had on their marketing decisions. These factors were ranked using an index formula based on the relative degree of influence attributed to each factor. Producers were asked to rate factors that influenced both WHEN (Figure 36) and WHERE (Figure 37) lambs are marketed.

A. Factors Influencing WHEN Lambs are Marketed

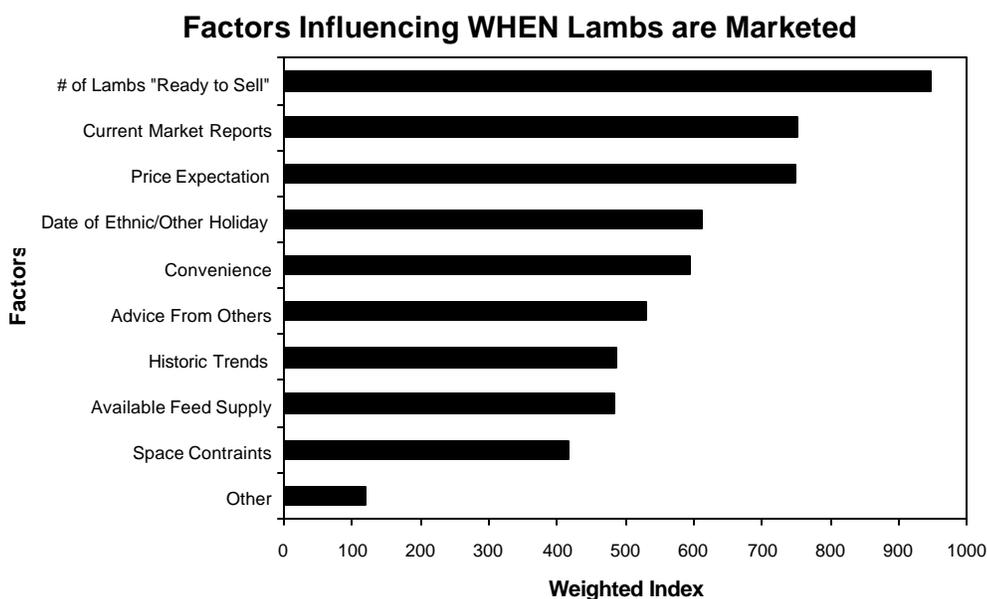


Figure 36.
Source: Survey

B. Factors Influencing WHERE Lambs are Marketed

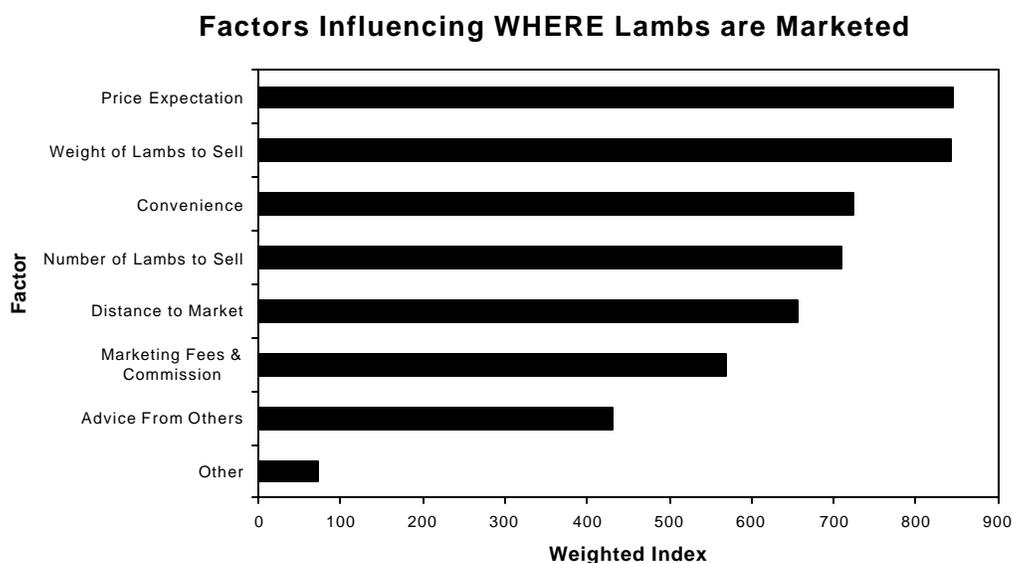


Figure 37.
Source: Survey

The survey found no significant difference between part-time and full-time farmers as to the degree of influence that convenience had on choice of market outlet, with 52.8% of part-time farmers and 53.0% of full-time farmers indicating that convenience had a strong to moderate influence on their choice of market outlet. Distance to market had only a slightly greater influence on part-time versus full-time farmers' choice of market outlet, with 49.3% of part-time farmers and 43.5% of full-time farmers indicating that distance had a strong to moderate influence on their choice of market outlet.

VII. Marketing Alternatives

Producers were asked if they were interested in participating in an organized marketing program with other sheep producers. Response was fairly evenly distributed, with 34.8 percent, 32.5 percent, and 32.8 percent answering, "Yes", "No", and "Unsure", respectively.

Convenience was a significant factor explaining level of interest expressed in an organized marketing program. Producers identifying "Convenience" as a factor affecting choice of market outlet were less interested in participating in an organized marketing program. "Distance to Market" and "Marketing Fees and Commissions" were marginally significant factors influencing producer's level of interest in an organized marketing program.

A. Level of Interest

Those producers that answered "Yes" or "Unsure" when asked if they were interested in participating in an organized marketing program, were asked to rate their level of interest (strong, moderate, weak, none) in various potential marketing alternatives. The alternatives were ranked using an index formula based on relative degree of interest. "Local Lamb Marketing Pools", "Pool Lambs for Transport to a Terminal Market", and "Special State-Graded Sales at WV Sale Barns", ranked 1, 2, and 3, respectively (Figure 38).

Ranking of Interest in Potential Marketing Alternatives

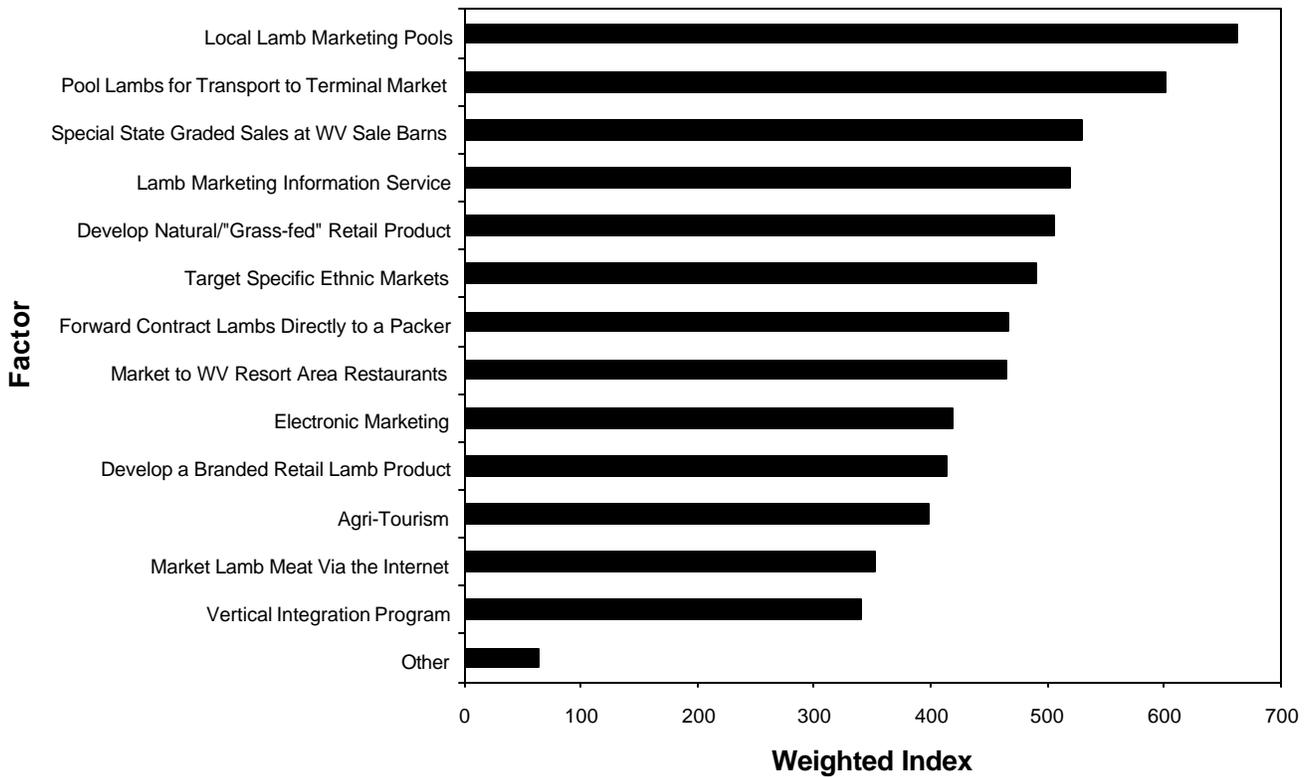


Figure 38.
Source: Survey

B. Feasibility

The feasibility of the two different types of pooling options, "Lamb Pools" and "Transportation Pools", was assessed in part based on the number of producers interested ("yes" response) at the county level and on the number of lambs marketed by those producers in 2001 (Figures 39a & 39b).

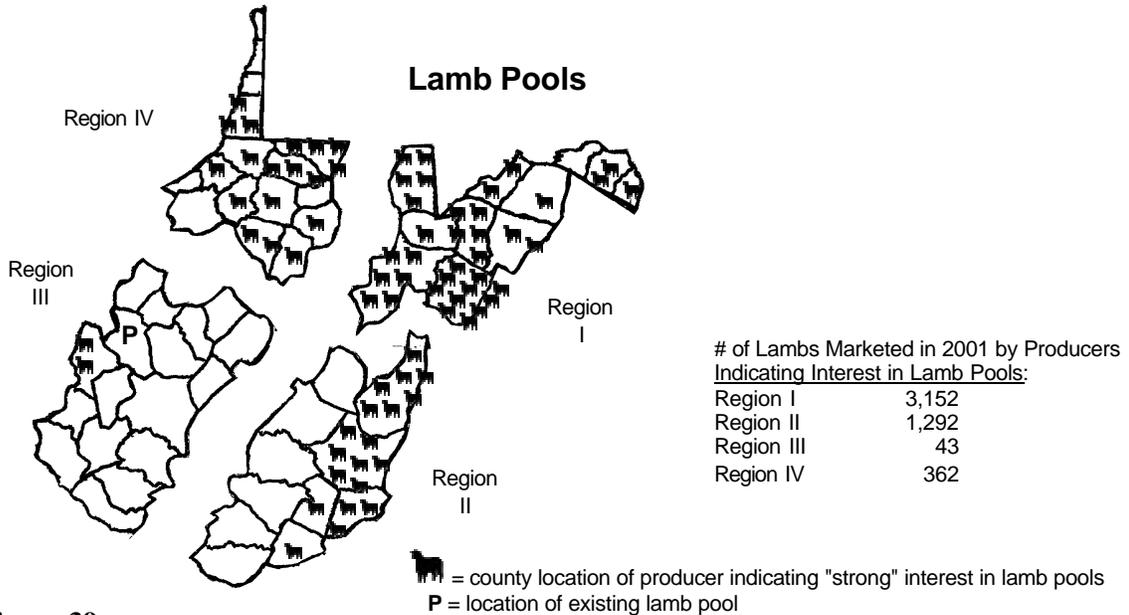


Figure 39a.
Source: Survey

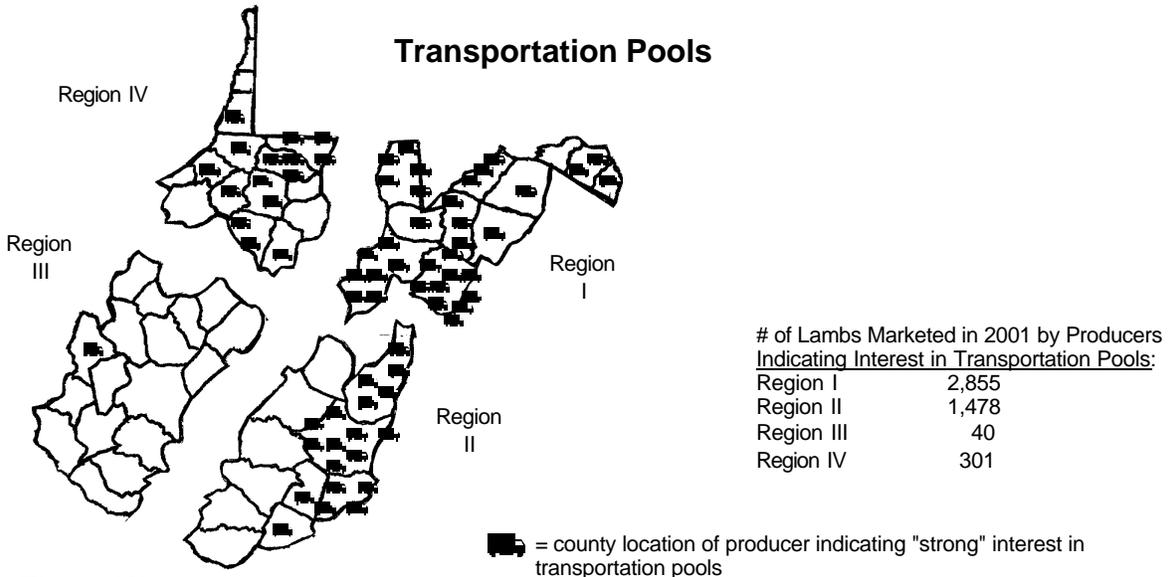


Figure 39b.
Source: Survey

Lamb Pools - Producers can gain some advantage of economies of scale by organizing and marketing lambs collectively. Lamb pools offer the opportunity to concentrate a sufficient volume of lambs to attract buyers, foster competitive bidding, and facilitate the price discovery process. Co-mingled lots can result in larger, more uniform offerings that are more attractive to both local and out-of-state buyers¹⁰.

The West Virginia and Ohio Sheep Producers Association, in cooperation with Jackson County Cooperative Extension, sponsors an annual lamb pool. The pool, which has been operating since 1999, was organized to address common lamb marketing problems in western WV and eastern OH - areas with relatively few sheep and consequentially, few lamb buyers. The sale is held the 2nd Thursday in December at the Jackson County Livestock Market, in Fairplain, WV (Jackson County, WV shares a common border with OH) and markets between 300 and 500 lambs annually. Lambs are weighed and graded the day of the sale with bids accepted from buyers both on- and off-site (via telephone link-up). The WV/OH Lamb Pool provides a successful model for potentially broader application in other areas of WV.

Beginning in the late 1970s, WV participated periodically in a mid-Atlantic cooperative lamb marketing organization, Eastern Lamb Producers Cooperative. The cooperative, at one time, also included the states of Delaware, Kentucky, Maryland, North Carolina, Tennessee, and Virginia. The organization marketed lambs electronically in pooled/co-mingled lots. Lambs were consigned to the sale based on the number of head, and estimated live weight and grade. Following the sale, lambs were collected at central take-up points where they were graded and weighed. Although the marketing cooperative is still in existence, in practice it is loosely organized, serving a much smaller geographical area and handling relatively few lambs.

Transportation Pools - Transportation pools can help individual producers reduce the cost of delivering lambs to livestock markets located outside their local areas. However, when attracted to distant markets by reports of higher prices, producers need to consider not only the additional cost of transportation, but also the impact that shrink can have on the total pounds of lamb marketed. Shrink is the amount of weight lost during transportation and marketing due to tissue dehydration and loss of gut fill. During certain periods, price incentives may be such that it can be more profitable to transport lambs to out-of-state or out-of-area markets. At other times, the additional costs of transportation and shrink can offset any perceived price advantage at out-of-state/out-of-area markets.

An example of an operational transportation pool was investigated. This transportation pool originates in southwest Virginia and is a privately operated for-profit service. The operator of the pool schedules several pick-up locations along the Interstate 81 corridor in Virginia and delivers lambs to the livestock auction market in New Holland, PA. Producers are

¹⁰ It is generally more cost-effective for buyers to purchase a larger volume of lambs at a single location compared to purchasing smaller lots at dispersed locations.

charged a flat per head transportation fee. Lambs are not co-mingled, but are sold under each individual owner's name. Final sale proceeds are forwarded by the market, via Federal Express, to the pool operator who in turn distributes the proceeds to participating producers.

Special State-Graded Sales - Virginia also provides a model for Special State-Graded Lamb and Sheep Tel-O-Auction sales. These sales are sponsored by area producer groups in cooperation with the Virginia Department of Agriculture, Virginia Cooperative Extension, and the local livestock exchange. Lambs and sheep are consigned prior to the sale date. Animals are delivered to the local livestock exchange the morning of the sale, where they are evaluated and co-mingled according to grades. This model could easily be adapted in WV. WV has trained livestock graders available through the WV Department of Agriculture that work with the state's local livestock markets. During the period 1996-2001, VA 91-125 pound slaughter lamb prices averaged consistently higher than did WV 100-125 pound slaughter lamb prices (Figure 40). The ability of VA's Special State-Graded Tel-O--Auctions to concentrate lamb numbers and increase buyer participation may, in part, account for some of the price spread between VA and WV slaughter lamb prices. The leadership provided by area producer organizations working in conjunction with the State Department of Agriculture and Cooperative Extension is crucial to the success of this type of marketing program.

**WV 100-125 lb Slaughter Lambs & VA 95-125 lb Slaughter Lambs
(1996-2001)**

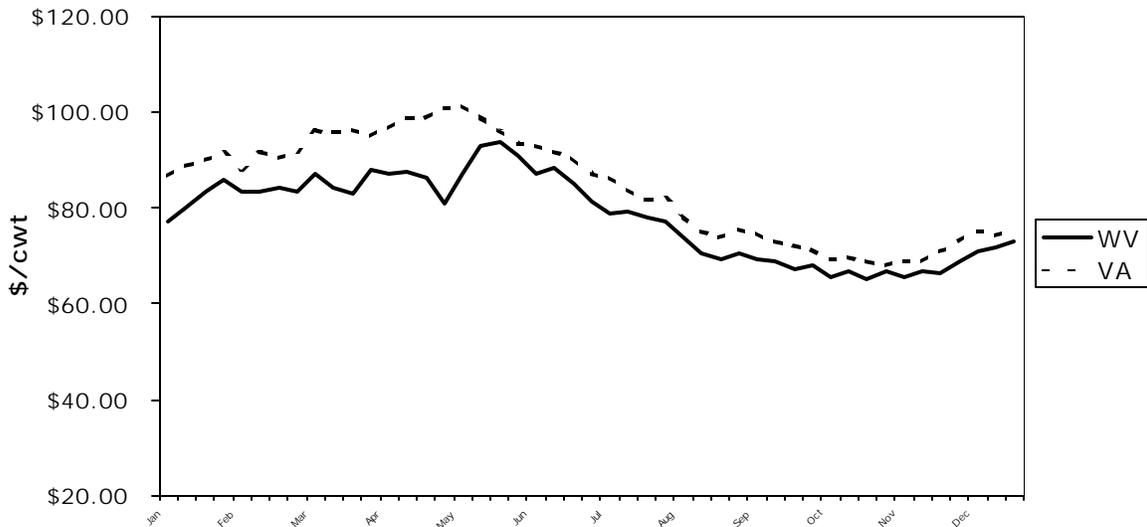


Figure 40.
Source: WVDA, VPI

VIII. Profitability Influences

Producers were asked to rate a number of factors in terms of importance (very important, important, less important, not relevant) to the overall profitability of their sheep enterprise. "Flock Health and Parasite Management", "Cost Control and Production Efficiency", and "Forage and Nutrition Management" ranked 1, 2 and 3, respectively. These factors were followed by "Predation Management", "Genetics and Selection", "Carcass Quality and Yield Grade", "Strategic Marketing Plan", and "Fall or Accelerated Lambing Programs", respectively (Figure 41).

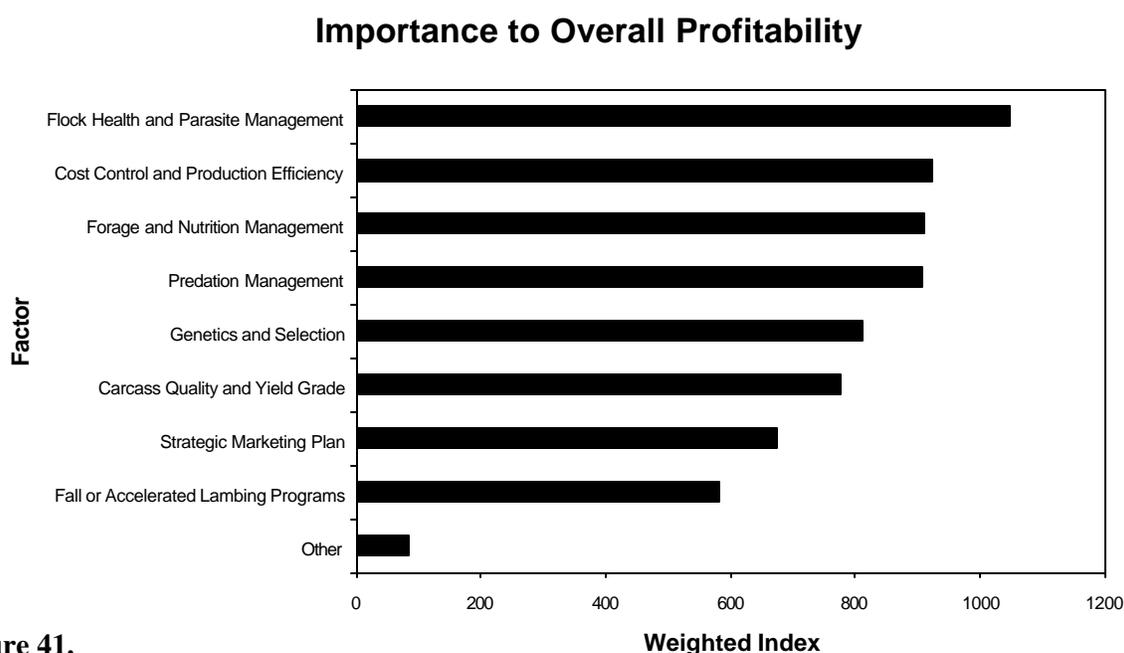


Figure 41.
Source: Survey

Based on the information provided in Section IX, Producer Demographics, age and attendance at educational sheep production programs were significant factors in determining the degree on importance producers placed on strategies to enhance profitability. Older producers were less likely to consider strategies to enhance profitability while producers attending educational activities related to sheep production were more likely to assign importance to profitability enhancing strategies. The number of breeding ewes per flock was marginally significant in explaining use of strategies to enhance profitability. Producers tended to ascribe greater importance to these strategies as flock size increased.

#1. "Flock Health and Parasite Management" ranked number one among the top 8 factors producers considered important to profitability. As sheep numbers in WV have declined, so too have support services for sheep production. Producers are finding it increasingly difficult to identify veterinarians in their area who are knowledgeable about flock health and disease conditions common to sheep. The NAHMS Sheep 2001 study showed that only 39.1 percent of producers cited veterinarians, private practitioners, or consultants as a "very important" source of information on sheep health. The study showed 30.7 percent of producers cited other sheep producers and 29.3 percent cited shearers as very important sources of information on sheep health. Magazines and newsletters ranked 4th at 22.7 percent and university/extension ranked 5th at 22.0 percent.

The WV Honor Flock Program was developed by the WV Department of Agriculture to help control the spread of communicable diseases such as foot rot and sore mouth in WV flocks. The program also assesses both internal and external parasite control management practices, collects information about predation losses, and includes a scrapie surveillance component. This program offers WV producers an additional flock health resource. As of January 1, 2003, 142 flocks were enrolled in the WV Honor Flock Program and 17 WV flocks were enrolled in the National Voluntary Scrapie Flock Certification Program.

#2. "Cost Control and Production Efficiency" ranked 2nd among factors producers considered important to over-all profitability. In a discussion of risk management, Tom McConnell, WVU Farm Management Specialist stated, "From a risk management point of view, efficiency will serve the operation better than price. The manager can affect efficiency, where individually, he or she has no control over price." (McConnell, 2001). Cost and return data collected for farms participating in WVU breeding trials were analyzed to determine the "cost per unit of production" (CPUP) or "cost per pound of lamb produced" for each individual farm. Data were collected for both traditional spring-lambing flocks and for out-of-season or fall-lambing operations. The average CPUP for traditional spring-lambing operations was \$0.51 per pound and for fall-lambing operations, \$0.58 per pound. HOWEVER, the variation among farms within a particular lambing season (spring or fall) was greater than the variation between lambing seasons (Figures 42a & 42b). The data showed nearly a \$1.00 per pound difference between the highest and lowest CPUP. Surprisingly, the CPUP for some of the traditional spring-lambing farms was significantly higher than for many of the fall-lambing operations. Predictably, findings showed a relationship between the CPUP and both lambing percentage and feed costs - more operations with a higher lambing percentage fell into the lower CPUP category. Conversely, more operations with higher feed costs fell into the high CPUP category. "West Virginia Quick View for Sheep" and "Sheepbud" were developed by the WVU Cooperative Extension Service Farm Management Division and are available via the internet at www.wvu.edu/~agexten/farmman2/template/index.htm, to help producers determine the CPUP for their individual operation.

**Cost/Lb of Lamb Produced
Spring-Born Lambs
(1998-1999)**

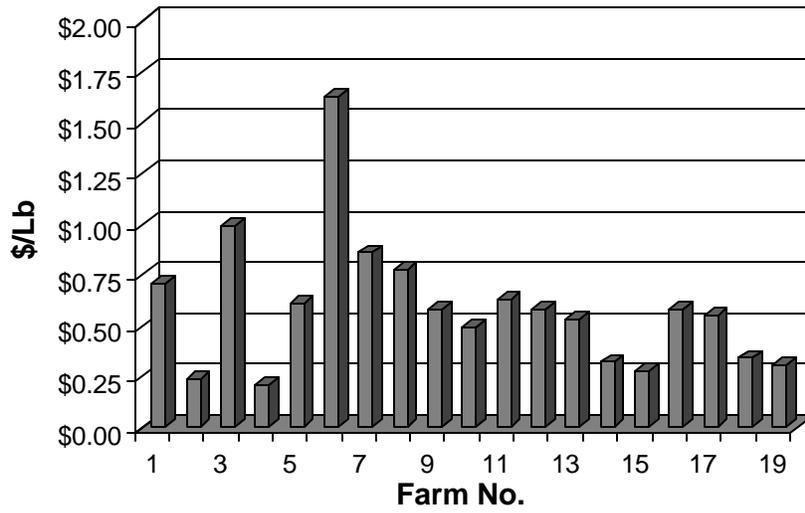


Figure 42a.
Source: Singh, 2000

**Cost/Lb of Lamb Produced
Fall-Born Lambs
(1998-1999)**

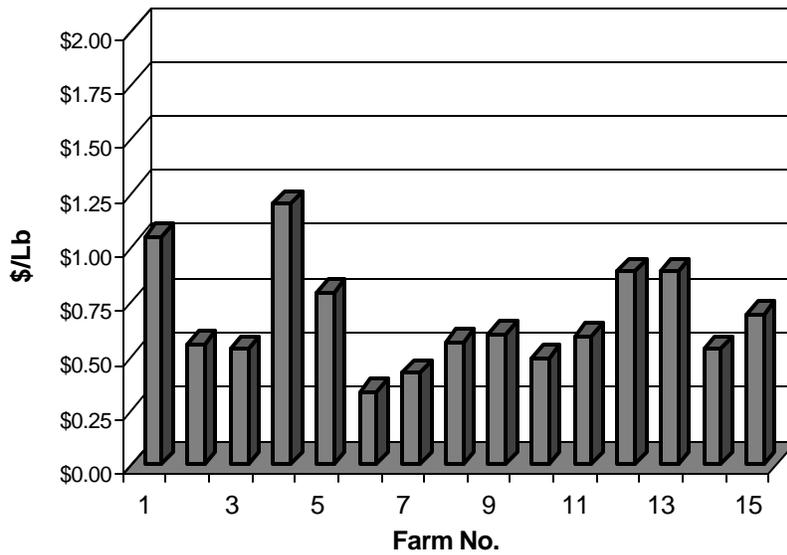


Figure 42b.
Source: Singh, 2000

#3. "Forage and Nutrition Management" was the third highest ranking profitability factor. Harvested feed and pasture costs make up the highest percentage of the annual operating costs for a sheep enterprise. It has been estimated that up to 70 percent of the total feed costs in producing a pound of lamb are ewe feed and pasture costs (Glimp, 1991). For producers participating in the out-of-season breeding program in WV, cost-effective nutrition and forage management is particularly important. WVU Cooperative Extension offers a series of Forage-Livestock Schools to help producers better understand the interactions of forage-livestock systems, evaluate available resources, and match livestock to the environment and to the market. Information about forage-livestock systems can be found at www.caf.wvu.edu/~forage/.

#4. "Predation Management" ranked 4th among factors producers considered important to over-all profitability. Predation has exacerbated the decline in sheep numbers in WV and has a significant impact on the profitability of many operations. A 1996 Shepherd's Survey conducted by the WVU Extension Service indicated that predation cost WV shepherds an average of \$8.59/head with losses being highest for the eastern counties of Randolph, Greenbrier, Monroe and Pendleton. Losses were concentrated in the months of April through June, when lambs are typically on pasture with their dams. The Shepherds Survey indicated that operations with lambs born in February through April experienced predator losses nearly twice as great as operations with lambs born during other months.

Coyotes are the number one predator of all livestock in WV. The National Agricultural Statistics Service Sheep and Goat Predator Report for 1999 estimated total losses of sheep and lambs to all predators at 3,600 head in West Virginia. Losses to coyotes were estimated at 58 percent, bears 8 percent, and dogs 31 percent (Figure 43).

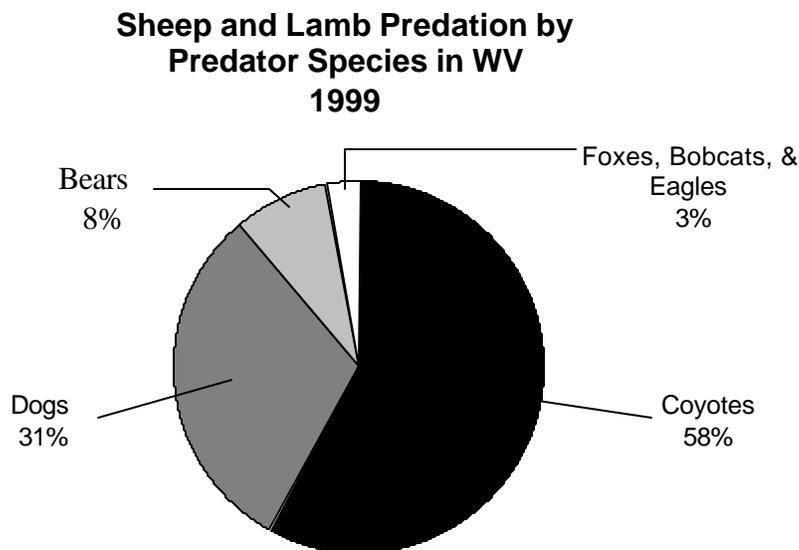


Figure 43.
Source: USDA/NASS

A section was provided at the end of the survey for "Additional Comments" (see Section X). Approximately 28 percent of those providing additional comments cited concerns specific to predation. A number of producers stated that predation is the number one challenge facing WV sheep producers and the number one reason why WV farmers leave the sheep business.

Federal cuts in funding that helped support WV Wildlife Services Agency's successful Integrated Predation Management Program have forced that Agency to eliminate some of its predation management activities and to restrict direct on-farm services to seven eastern counties - Grant, Greenbrier, Hardy, Monroe, Pendleton, Pocahontas, and Randolph. Although these seven counties are among the leading sheep-producing counties in the state, less than half (47.2%) of the sheep producers that indicated predation management was very important to the overall profitability of their sheep enterprise, resided in one these seven counties.

Predation losses and costs of protecting sheep from predators are second only to feed and pasture costs in terms of production expenses. Shelton and Rodgers (1998) suggested that predation may be more serious than stated or realized by current producers, as those who suffered the greatest losses are no longer in the business. Fall-lambing programs have the potential to reduce losses due to predation. Singh (2000) found a lower lamb mortality rate for fall- versus spring-lambing farms in WV (see Table 7). Although specific causes of lamb deaths could not be delineated from the study, reduced losses to predators, as well as more intensive lambing management during fall-lambing, likely contributed to the lower lamb mortality rate on the fall-lambing farms. Additional outreach programs may be helpful to explain the use of fall-lambing as a non-lethal predation management strategy.

Predation management was rated very important or important to overall profitability by 88.9% of producers. Of those, only 11.2% percent reported lambs born out-of-season.
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#5. "Genetics and Selection" ranked 5th and was rated "very important" or "important" to overall profitability by 83.2 percent of producers. The diversity in the genetic base of the state's breeding flock and choice of breeds may indicate related challenges in terms of production efficiencies and marketing. (See Section I, G)

The National Sheep Improvement Program (NSIP) is the U.S. sheep industry's genetic evaluation program and provides Estimated Progeny Difference (EPD) information for purebred sheep. NSIP estimates EPDs for a number of economically important traits including maternal traits (number of lambs born per ewe lambing, maternal milk), growth traits (weaning weight, post-weaning weight, yearling weight), and wool traits (grease fleece weight, fiber diameter, fiber length). EPDs are also being developed for carcass-value traits, accelerated lambing, and parasite resistance/tolerance (Katahdin sheep). NSIP is a tool that producers can use to help make objective selection decisions and effect genetic improvement in their flocks. In 2001, only one WV flock was enrolled in the National Sheep Improvement Program (NSIP). Increased

participation in this program could help improve the efficiency of the WV sheep industry. Additional information about NSIP can be found at www.nsip.org.

#6. "Carcass Quality and Yield Grade" was rated "very important" to overall profitability by 40.3 percent of producers. In general, today's marketing system provides little incentive in terms of price discounts or premiums based on carcass quality. Lambs most frequently are sold on a live weight, average price basis with producers receiving little or no feedback on the final carcass quality of the lambs they produce and market. In fact, studies have shown that the widespread use of average pricing actually tends to reward poor production and penalize quality production. As value-based marketing becomes implemented on a broader scale, and premiums/discounts are reported back to producers, the incentive for producers to invest in improved genetics and to make the production and management changes necessary to produce and market higher quality, higher-yielding lambs should similarly improve.

A value-based marketing pilot program is being investigated. Preliminary information-gathering contacts and visits have been made with several packers to explore the potential of marketing lambs directly to a packer. The incorporation of a small-scale custom feeding/finishing component is also being examined.

#7. "Strategic Marketing Plan" ranked 7^h, with only 31.1 percent of producers indicating strategic marketing is "very important" and 67.2 percent of producers indicating strategic marketing is "very important" or "important" to the overall profitability of the sheep enterprise.

Although producers rated a marketing plan relatively less important to profitability than a number of other production and management practices, the relationship between production and marketing plays a key role in determining net returns to the operation. The development of a comprehensive management and marketing plan will provide focus and help integrate production and marketing objectives. Sheep producers in particular are being admonished to "produce for a market" rather than to simply "market what they produce". With the diverse consumer markets available in the northeast, appropriate production and management systems must be considered with BOTH production resources AND the end market in mind.

As producers seek to improve the overall profitability of their operations, the development of a comprehensive management and marketing plan can tie together production and marketing objectives. A portion of the new marketing chapter of the SID Sheep Production Handbook (2002, in press) focuses on this relationship between production and marketing. Individual producers can target low-cost production, strive for higher than average prices, or some combination of the two. Producers with below average costs per unit of production will, by definition, be in a position to earn above average rates of return. Similarly, producers who consistently receive higher than average prices for their lambs will, by definition, earn above average rates of return. The chapter's authors suggest that producers need to identify whether

their individual strengths are in the production area (i.e. costs) or in the marketing area (i.e. prices).

The authors suggest that the overall key to successfully matching production and marketing alternatives, both in the short-run and in the long-run, is improved information. The following recommendations are provided:

1. Sheep producers must develop a sound production and financial record keeping system (Management Information System). Detailed production and financial information is needed in order to compute performance measures that are consistent with industry accepted practices to facilitate benchmarking and long-term business planning.
2. Individual sheep producers need a comprehensive understanding of the unique set of resources (land, capital, environmental, personnel, etc.) that they have available. In order to achieve a “competitive advantage” producers need to match genetics, production cycles, and marketing objectives to their individual resource base.
3. Producers need to identify the “type” of product they can best produce, and the most efficient production methods. Certain geographic areas may lend themselves to specific niche markets better than others, for example. Alternatively, many individual producers will find it to their advantage to be low cost commodity producers.
4. Producers need to be keenly aware of seasonal price patterns and longer-term price cycles, and the costs incurred in trying to target particular marketing windows. Detailed enterprise analysis and budget projections, including sensitivity to uncontrollable factors, can assist in weighing the risk-reward tradeoffs.
5. Sheep producers need access to a broad range of current market information, and need to understand how management strategies can be adjusted in response to short-term market conditions. Obviously, short-run sheep and wool market fluctuations can influence marketing decisions. In addition, input market conditions can influence production and management decisions. Finally, government incentive programs can influence profit-maximizing decisions of individual producers.
6. Sheep producers need to be aware of the various factors that contribute to financial risk in their operations. Production, financial, and marketing risks are all present. Unlike many other agricultural commodities, there is no futures market for feeder or slaughter lambs, so that component of price risk cannot be transferred to another party as easily. Individual managers need to evaluate their own capacity, and willingness, to accept risk. They need to be able to weigh the risk-reward tradeoffs and develop strategies to manage risk appropriately. (SID, 2002, in press).

#8. "Fall or Accelerated Lambing Programs" ranked eighth in importance among those factors listed affecting over-all profitability.

Fall or accelerated lambing was rated "important" or "very important" to overall profitability by 42.4% of producers. Of those, only 22.3% reported lambs born out-of-season in 2001. Of producers indicating that fall or accelerated lambing was important/very important to profitability, 78.3% reported less than 50% of their lambs born out-of-season and 21.7% reported 50% or more of their lambs born out-of-season.

The profitability of spring lambing is attributed primarily to lower costs of production and to the greater fertility and prolificacy of fall-bred ewes. The profitability of fall lambing is tied to higher spring market prices and to reduced production losses due to parasites and predation. The profitability of fall lambing can also be enhanced by incorporating techniques and technologies that help overcome the lower fertility and fecundity of spring-bred ewes and by the ability to capitalize on fall forages to help reduce feed costs. Lambing in the fall also allows utilization of labor and of facilities that are often available during the fall and winter months.

Data collected on 38 farms cooperating with WVU and WVSMP in out-of-season breeding and estrous synchronization studies between 1998-1999 are summarized in Table 7. Pregnancy rates on these farms averaged 75 percent for spring-bred (fall-lambing) ewes with a 159 percent lamb crop (lambs born per ewe lambing) and an 89 percent pregnancy rate with a 170 percent lamb crop for fall-bred (spring-lambing) ewes. There was essentially no difference in the average market weight of spring- versus fall-born lambs - although, spring-born lambs took longer to reach market weight than did fall-born lambs (185 versus 162 days). The average price received per pound of lamb marketed was \$0.75 for spring-born lambs and \$0.93 for fall-born lambs. The average cost per pound of lamb produced was \$0.58 and \$0.51 for fall and spring lambing systems, respectively. Lower lamb mortality rates were observed for fall lambing systems. The lower mortality rate for fall-born lambs was attributed primarily to decreased losses to predators. The net profit per pound of lamb produced was higher for fall lambing (\$0.33) than for spring lambing (\$0.28) systems (Singh, 2000).

Table 7. Fall-born vs. Spring-born Lambs

	Fall-born	Spring-born
Pregnancy Rate (ewes lambing/ewes exposed)	75%	89%
Lamb Crop (lambs born/ewe lambing)	159%	170%
Average Market Weight	96 lbs	97 lbs
Average Day of Age When Sold	162 days	185 days
Average Market Price	\$0.93	\$0.75
Average Cost/lb of Lamb Produced	\$0.58	\$0.51
Mortality Rate	6%	10%
Profit/lb of Lamb Produced	\$0.33	\$0.28

Source: Singh, 2000

IX. Producer Demographics

In an effort to characterize not only sheep production in WV but also to profile sheep producers in the state, a series of demographic questions were included in the survey. The information collected was used to examine the influence that certain producer characteristics such as number of years raising sheep, part- or full-time farming status, percent of household income derived from farming, etc., have on lamb production and marketing decisions.

A. Number of years raising sheep

Over half (58.1%) of producers responding to the survey had raised sheep for more than 21 years. Approximately 10.1% of producers had raised sheep for less than 5 years, 15.3% for 5 to 10 years, and 16.5% for 11 to 20 years (Table 8).

B. Age

Nearly three-fourths (73.4%) of WV sheep producers were over the age of 45, with over one-fourth (26.6%) over the age of 65. Only 4.0% of producers were under the age of 35, 22.6% were between 35 and 45, and 27.9% between 56 and 65 (Table 8).

C. Education

Nearly half (48.6%) of respondents had at least some college education, and 16.4% indicating graduate or professional training. (Table 8).

Table 8. Years Raising Sheep, Age, and Education

	Percent
Years Raising Sheep	
< 5	10.1%
5 – 10	15.3%
11 – 20	16.5%
> 21	58.1%
Age	
< 35	4.0%
35-45	22.6%
46-55	27.9%
56-65	18.9%
> 65	26.6%
Education	
Some high school	8.0%
High school/vocational school	43.4%
Some college	13.2%
College	19.0%
Graduate/professional school	16.4%

Source: Survey

D. Farming Status, Income from Farming, and Other Farm Enterprises

Table 9 summarizes the farming status (part-time versus full-time), percent of gross household from farming, and other farm enterprises that survey respondents are engaged in.

The survey showed that 63.2% of WV sheep producers are part-time farmers and 36.8% farm full-time.

Over half of all sheep producers (56.1%) indicated less than 20% of their gross household income came from farming, while 14.6% reported greater than 80% of gross household income from farming.

Sheep were the sole source of farm income on 15.6% of operations. Nearly two-thirds (64.4%) of operations reported farm income from both sheep and beef cattle, 12.5% from both sheep and goats, with 13.2% reporting income from crops.

Table 9. Farming Status, Income From Farming, and Other Farm Enterprises

	Percent
Farming Status	
Full-time	36.8%
Part-time	63.2%
Income From Farming	
< 20%	56.1%
20 – 40%	17.5%
41 – 60%	9.2%
61 – 80%	2.5%
> 80%	14.6%
Sheep & Other Farm Enterprises	
Sheep only	15.6%
& Beef Cattle	64.4%
& Dairy Cattle	3.1%
& Goats	12.5%
& Poultry	10.8%
& Other Livestock	6.1%
& Cash Crops	13.2%
& Other	9.8%

Source: Survey

E. Educational Programs

To help assess the effectiveness of educational programs and guide future activities, producers were asked if they had participated in any programs related to sheep production during the past two years. Twenty-four percent of producers indicated that they had attended educational programs and 76.0% had not.

Those producers that had *not* attended an educational program during the past two years were asked, "why not?" One-third indicated "none were available in my area," 41.8% indicated "times were inconvenient," only 5.1% indicated "topics were unsuitable", and 19.8% cited other reasons for not attending.

Those that had attended programs were asked to list the types of programs they had attended.

The West Virginia Sheep Management Project, supported by a grant from the WV State Legislature, has sponsored producer workshops addressing each of the eight factors affecting profitability presented in Section VIII. Survey information and analysis, including the profitability ratings, will serve as a basis for the development of future educational activities.

F. Internet Access

To facilitate more timely and efficient communication, producers were asked if they had access to the internet. The response was evenly divided, with 49.7% indicating that they *did* have access to the internet, and 50.3% indicating that they *did not*.

X. Additional Comments

At the end of the survey, producers were given the opportunity to describe any changes that they felt are needed or that would improve lamb marketing in their area. Approximately 38 percent of producers who returned the survey provided additional comments. In general, producers expressed frustration over the current market situation for both lamb and wool, including few buyers, price volatility in the lamb market, and low prices in the wool market. Lamb pools, board sales, direct marketing, ethnic markets, and the recently-implemented (July, 2002) lamb check-off program were among the other marketing topics/concerns cited. Of those responding, approximately 28 percent expressed concerns over predator control - coyotes, bears, *and* dogs. A number of these producers indicated that they have reduced their flock size and/or plan to leave the sheep business due to predation. Producers also commented on a variety of production issues - including flock health, parasite control, selection and breeding, pasture management, and fencing.

OUTCOMES

Information collected and developed for the Project has been presented at state lamb marketing conferences, at a number of local producer meetings, and in WV Sheep Management Project newsletters. It is anticipated that the Information Project final report will be made available to producers on the WVSMP web site, www.caf.wvu.edu/avs/sheep. Additional analysis of the survey is being conducted as part of an in-depth PhD dissertation, and should provide further insight and the basis for additional targeted recommendations. The survey model developed for the Information Project may be employed by the Northeast Sheep and Goat Marketing Program to help characterize the production and marketing practices of sheep and goat producers in other states throughout the region.

CONCLUSION

Individual lamb producers have some degree of control over how they produce and market their product. Producers in the region need to adjust and adapt marketing practices to the changing market environment. With the emergence and growth of certain segments of the lamb market, it has become increasingly important for producers to have access to reliable information about these markets. Producers must become more knowledgeable about the underlying perceptions of consumers regarding lamb and lamb products, the characteristics of the live lambs and lamb meat products that these markets demand, about seasonal patterns of demand - particularly those of the ethnic markets - and about the characteristics and quality of the lambs they produce and market.

The West Virginia Lamb Marketing Information Project and Marketing Survey of Sheep Producers in West Virginia have provided a comprehensive overview and created the basis for a greater understanding of the lamb production and marketing environments in West Virginia. Supplementary information collected and analyzed for the Project adds an additional perspective of sheep production and lamb marketing in West Virginia relative to both regional and national production and marketing practices and trends. Recent state and federal programs, including the West Virginia Sheep Management Project, the USDA's 201 Lamb Meat Adjustment Assistance Program, and the new American Lamb Check-off, among others, have helped foster a renewed sense of optimism as the sheep industry continues its rebuilding efforts. The West Virginia Lamb Marketing Information Project provides a basis for the on-going evaluation and development of lamb marketing efforts in West Virginia, as well as guidance in the development of future educational programs and activities in the state.

APPENDICES

APPENDIX A

WEST VIRGINIA LAMB MARKETING SURVEY



Dear WV Sheep Producer:

West Virginia University and the West Virginia Department of Agriculture are conducting a survey of sheep producers to collect information that will be used to help improve lamb marketing in West Virginia. Survey results will provide an overview of current marketing practices and of current market outlets for WV lambs. The survey will help identify *your* marketing needs and concerns, and gives *you* the opportunity to express your interest in a number of different potential marketing alternatives. The information that you provide will be used to help analyze and evaluate various marketing opportunities, help develop effective marketing strategies, and help design educational programs to meet your needs as a WV lamb producer.

Please take a few minutes to complete the enclosed lamb marketing survey and return it in the postage paid envelope provided. Participation is voluntary and you do not have to answer every question. The information that you provide will be kept strictly confidential for individual producers.

Funding for this survey is provided under the USDA Federal-State Marketing Improvement Program. This survey is designed specifically for West Virginia lamb producers to help improve lamb marketing in West Virginia and is part of the West Virginia Lamb Marketing Information Project being conducted jointly by:

**West Virginia
Sheep Management Project
P.O. Box 96
Franklin, WV 26807**

**West Virginia University
Davis College of Agriculture,
Forestry & Consumer Sciences
Div of Animal & Vet Sciences &
Dept of Resource Management
P.O. Box 6108
Morgantown, WV 26506**

**West Virginia Department
of Agriculture
Marketing Division
1900 Kanawha Blvd. East
Charleston, WV 25305**

Marketing Survey of Sheep Producers in West Virginia

1) On January 1, 2001, how many breeding ewes did you own? _____

2) What is the predominant breed(s) of your ewes? _____

3) On January 1, 2001, how many breeding rams did you own? _____

4) What is the predominant breed(s) of your rams? _____

5) In 2001, approximately what **PERCENTAGE** of your lambs were born during:

Jan. _____%	Apr. _____%	July _____%	Oct. _____%
Feb. _____%	May _____%	Aug. _____%	Nov. _____%
Mar. _____%	June _____%	Sept _____%	Dec. _____%

6) In 2001, **HOW MANY** lambs did you sell? _____

7) In 2001, approximately **HOW MANY** lambs did you sell during:

Jan. _____	Apr. _____	July _____	Oct. _____
Feb. _____	May _____	Aug. _____	Nov. _____
Mar. _____	June _____	Sept. _____	Dec. _____

8) At what age and weight do you prefer to sell your lambs?

Ave. age:	under 3 mos	3-6 mos	7-9 mos	9-12 mos	over 12 mos
Ave. wt:	under 45 lbs	45-60 lbs	61-75 lbs	76-90 lbs	
	91-105 lbs	106-120 lbs	over 120 lbs		

9) In 2001, approximately what percentage of your lambs **OR** how many lambs did you sell:

	PERCENT	<u>OR</u>	NUMBER
Through a West Virginia livestock auction	_____	_____	_____
Through an out-of-state livestock auction	_____	_____	_____
Via electronic auction	_____	_____	_____
Directly to a livestock dealer	_____	_____	_____
Directly to a feeder	_____	_____	_____
Directly to a packer	_____	_____	_____
Directly to niche or specialty market (restaurant, retail store, etc)	_____	_____	_____
Directly to the consumer (freezer lamb)	_____	_____	_____
As club lambs	_____	_____	_____
For breeding stock	_____	_____	_____
Or, kept as replacements	_____	_____	_____
Other (please specify) _____	_____	_____	_____

10) To what extent do each of the following factors influence **WHEN** you sell your lambs?

	INFLUENCE			
	Strong	Moderate	Weak	None
Number of lambs "ready" to sell	1	2	3	4
Current market reports	1	2	3	4
Historic trends	1	2	3	4
Price expectation	1	2	3	4
Date of an ethnic or other special holiday	1	2	3	4
Advice from others (buyer, extension agent, etc)	1	2	3	4
Convenience	1	2	3	4
Space constraints	1	2	3	4
Available feed supply	1	2	3	4
Other (please specify) _____	1	2	3	4

11) To what extent do each of the following influence your choice of marketing **OUTLET** for your lambs?

	INFLUENCE			
	Strong	Moderate	Weak	None
Number of lambs to sell	1	2	3	4
Weight of lambs to sell	1	2	3	4
Distance to market (sale barn, slaughter plant, etc.)	1	2	3	4
Convenience	1	2	3	4
Price expectation	1	2	3	4
Marketing fees & commissions	1	2	3	4
Advice from others	1	2	3	4
Other (please specify) _____	1	2	3	4

12) Are you interested in participating in an organized marketing program with other sheep producers?

Yes (go to Question 13)

No (go to Question 14)

Unsure (go to Question 13)

13) Indicate your level of interest in each of the following *potential* marketing alternatives:

	INTEREST			
	Strong	Moderate	Weak	None
Local lamb marketing pools	1	2	3	4
Pool lambs for transport to a terminal market (e.g. New Holland, PA)	1	2	3	4
Special state graded sale dates at WV sale barns	1	2	3	4
Electronic marketing (live animal)	1	2	3	4
Forward contract lambs directly to a packer	1	2	3	4
Market to WV resort area restaurants	1	2	3	4
Agri-tourism: on-farm showcasing of production & products	1	2	3	4
Develop a branded retail lamb product	1	2	3	4
Develop a natural or "grass-fed" retail lamb product	1	2	3	4
Target specific ethnic markets	1	2	3	4
Market lamb meat via the Internet	1	2	3	4
Vertical integration program (conception to consumption)	1	2	3	4
Lamb marketing information service (buyer & seller listings)	1	2	3	4
Other (please specify) _____	1	2	3	4

14) How important are each of the following to the overall profitability of your sheep enterprise:

	IMPORTANCE			
	Very Important	Important	Less Important	Not Relevant
Cost control and production efficiency	1	2	3	4
Forage and nutrition management	1	2	3	4
Flock health and parasite management	1	2	3	4
Predation management	1	2	3	4
Fall or accelerated lambing programs	1	2	3	4
Genetics and selection	1	2	3	4
Carcass quality & yield grade	1	2	3	4
Strategic marketing plan	1	2	3	4
Other (please specify) _____	1	2	3	4

15) Over the next three years do you plan to:

Increase the size of your flock	Decrease the size of your flock
Maintain the same size flock	Unsure

Demographic Questions

16) How many years have you raised sheep? Under 5 5-10 11-20 Over 20

17) In what county(s) is your farm located? _____

18) What is your age? Under 35 35-45 46-55 56-65 Over 65

19) What is your highest level of education completed?

Some high school	High school/vocational school	Some college
College	Graduate/professional school	

20) What is your farming status? Full-time Part-time

21) What percentage of your gross **HOUSEHOLD** income comes from farming?

Under 20%	20-40%	41-60%	61-80%	Over 80%
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22) What percentage of your gross **FARM** income comes from each of the following enterprises?

Beef Cattle	_____ %
Dairy Cattle	_____ %
Sheep	_____ %
Goats	_____ %
Poultry	_____ %
Other Livestock	_____ %
Cash Crops	_____ %
Other	_____ %

100%

APPENDIX B

BREEDS OF SHEEP IN WEST VIRGINIA

*Blueface Leicester
Border Leicester
Cheviot
**Clunn Forest
Columbia
Coopworth
Corriedale
*Cormo
Cottswold
Dorper
Dorset
Finnsheep
Hampshire
*Icelandic
Jacob
*Karakul
Katahdin
*Leicester Longwool
Lincoln
Merino
Montedale
*"Natural-Colored"
*Navajo-Churro
*North Country Cheviot
Oxford
Polypay
Rambouillet
Romanov
Romney
Scottish Blackface
Shetland
Shropshire
Southdown
St. Croix
Suffolk
Targhee
Texel
Tunis
Wensleydale

*Listed in WV Sheep and Wool Directory 2002. Not reported in survey.

**Personal communication. Not reported in survey.

APPENDIX C

LICENSED WEST VIRGINIA LIVESTOCK AUCTION MARKETS

Buckhannon Stockyards, Inc
Buckhannon, WV

Elkins Stockyards, Inc.
Elkins, WV

Greenbrier Valley Livestock Market
Caldwell, WV

Jackson County Livestock Market
Fairplain, WV

New River Livestock Market
Beckley, WV

Ohio County Livestock Auction
Mt. Echo, Wheeling, WV

Parkersburg Livestock Auction
Mineral Wells, WV

Pocahontas Producers Co-op Assoc. Inc.
Marlinton, WV

Preston Farmers Market, Inc
Terra Alta, WV

South Branch Stockyards Inc.
Moorefield, WV

Livestock Market of Spencer, Inc.
Spencer, WV

Weston Livestock Marketing
Weston, WV

Source: WVDA

APPENDIX D

RELIGIOUS HOLIDAYS CALENDAR 1995-2010

Year	Western Easter	Orthodox Easter	Rosh Hashanah	Hanukkah	Ramadan	Eid al-Fitr	Eid al-Adha
1995	16-Apr	23-Apr	24-Sep	17-Dec	1-Feb	3-Mar	10-May
1996	7-Apr	14-Apr	13-Sep	5-Dec	21-Jan	20-Feb	28-Apr
1997	30-Mar	27-Apr	1-Oct	23-Dec	10-Jan 31-Dec	9-Feb	18-Apr
1998	12-Apr	19-Apr	20-Sep	13-Dec	20-Dec	30-Jan	8-Apr
1999	4-Apr	11-Apr	10-Sep	3-Dec	9-Dec	19-Jan	28- Mar
2000	23-Apr	30-Apr	29-Sep	21-Dec	28-Nov	8-Jan 28-Dec	16-Mar
2001	15-Apr	15-Apr	17-Sep	9-Dec	17-Nov	17-Dec	6-Mar
2002	31-Mar	5-May	6-Sep	29-Nov	6-Nov	6-Dec	23-Feb
2003	20-Apr	27-Apr	26-Sep	19-Dec	27-Oct	26-Nov	12-Feb
2004	11-Apr	11-Apr	15-Sep	7-Dec	15-Oct	14-Nov	2-Feb
2005	27-Mar	1-May	3-Oct	25-Dec	4-Oct	3-Nov	21-Jan
2006	16-Apr	23-Apr	23-Sep	15-Dec	24-Sep	24-Oct	10-Jan 31-Dec
2007	8-Apr	8-Apr	13-Sep	4-Dec	13-Sep	13-Oct	20-Dec
2008	23-Mar	27-Apr	30-Sep	21-Dec	2-Sep	2-Oct	9-Dec
2009	12-Apr	19-Apr	19-Sep	11-Dec	22-Aug	21-Sep	28-Nov
2010	4-Apr	4-Apr	9-Sep	1-Dec	11-Aug	10-Sep	17-Nov

Source: Greek Orthodox Archdiocese of Australia, Ontario Consultants on Religious Tolerance, The Worldwide Holiday and Festival Site, HebCal Interactive Jewish Calendar (hebc.com: Jewish Calendar Tools Site).

APPENDIX E

WEST VIRGINIA LAMB GRADE STANDARDS

Official USDA Grading Standards will be used for grading all livestock in West Virginia. Since most sale locations use our grade designations, marks, and sorting services to establish sale lots, it is necessary that sorting, marking, and sale procedures based on a combination of grade, weight, breed, yield, and sex be used in order to be of practical value in establishing sale lots and sale packaging systems rather than grading systems. The following grading and/or packaging systems will be used for all classes of livestock in West Virginia:

LAMBS

Blue Back	Ewe and Wether slaughter lambs that grade Prime or Choice by USDA standards and weigh in the general range of 100 to 125 pounds.
Blue Head	Ewe and Wether slaughter lambs that grade Prime or Choice by USDA standards and weigh in the general range of 85 to 95 pounds.
Blue X	Ram slaughter lambs that grade Prime or Choice by USDA standards and weigh in the general range of 95 to 125 pounds.
Double Blue	Ewe, Wether, and Ram slaughter lambs that grade Prime or Choice by USDA standards and weigh over 125 pounds.
Red Back	Ewe and Wether low yielding slaughter and/or feeder lambs that grade Choice or Good by USDA standards and weigh in the general range of 95 to 125 pounds.
Red X	Ram low yielding slaughter and/or feeder lambs that grade Choice or Good by USDA standards and weigh in the general range of 95 to 125 pounds.
Blue Rump	Ewe and Wether feeder lambs that grade Fancy or Choice by USDA standards and weigh in the general range of 75 to 90 pounds.
Blue Shoulder	Ram feeder lambs that grade USDA Fancy or Choice and weigh in the general range of 75 to 90 pounds.
Red Rump	Ewe and Wether feeder lambs that grade USDA Fancy or Choice and weigh in the general range of 60 to 75 pounds.
Red Shoulder	Ram feeder lambs that grade USDA Fancy and Choice and weigh in the general range of 60 to 75 pounds.
Blue Tail	Ewe, Wether, and Ram feeder lambs that grade USDA Good and weigh in the general range of 45 to 60 pounds.
Red Tail	Ewe, Wether, and Ram lambs that are inferior to any of the above listed grades. This designation will include lambs commonly known as skips, dead or alive, and slow.

Source: WVDA

VIRGINIA LAMB GRADING SPECIFICATIONS

Lambs with a blue mark will be expected to grade USDA Choice or Prime and a red mark will indicate a feeder lamb or USDA Good grade slaughter lamb. Lambs must have a minimum of about .07 inch backfat to grad Choice or Prime.

LAMBS

Blue O Lamb	Choice, Few Prime, Yield Grad 1, 2, Few 3 weighing 100-125# and up.
Double Blue O Lamb	Choice & Prime, Yield Grade 3-4 weighing 130# and up.
Ram Lambs	Will be marked with a blue mark on the rump in addition to slaughter grade mark.
Red O Lamb	Heavy feeder lamb, or Good and Low Choice lamb weighing 85-100 lbs.
Red Shoulder	Large and medium framed feeder lambs weighing 70-85#, expected to finish at 100# and up.
Blue Shoulder	Small framed feeder lambs weighing 70-85#, expected to finish at less than 100#.
Red Back	Large and Medium framed feeder lambs weighing 60-70#, expected to finish at 100# and up.
Blue Back	Small framed feeder lambs weighing 60-70#, expected to finish at less than 100#.
Red Tail	Large and Medium framed feeder lambs weighing 50-60#, expected to finish at 100# and up.
Blue Tail	Small framed feeder lambs weighing less than 60#, expected to finish at less than 100#.

Ram lambs will be marked with red mark on the rump, in addition to feeder classification, i.e. Red Shoulder Ram Lambs.

Source: VDACS

NESGMP PROPOSED LAMB GRADING STANDARDS

Lamb buyers in the Northeast prefer to assess specialty lambs based upon thickness and plumpness. The following grade classifications are used:

- Blue** Lambs are in good physical condition and have sufficient cover so that the backbone is barely distinguishable by placing a hand over the back. On a body condition score ranging from 1 to 5, these lambs would be placed in body condition 3 to 4.
- Red** Lambs are in good physical condition but do not have sufficient cover to fall into the blue category. The backbone is distinguishable by placing a hand over the back but the vertebrae do not protrude sharply. On a body condition score ranging from 1 to 5, these lambs would be placed in body condition 2 to 3.
- Green** Lambs are thin and/or in poor physical condition so that they are not ready for market.

Source: NESGMP

APPENDIX F

**LICENSED WEST VIRGINIA SLAUGHTER FACILITIES
THAT SLAUGHTER LAMBS AND SHEEP**

<u>Business Name and Location</u>	<u>Buyer</u>	<u>Remarks</u>
Campbell's Market, Inc. Beverly, WV	N	Custom slaughter State inspected
Cloverdale Packing, Inc. Parkersburg, WV	Y	Custom and commercial slaughter State inspected
Cook Brothers Meat Co., Inc. Cool Ridge, WV	N	Custom slaughter State inspected
Eddy's Farm and Slaughter Romney, WV	N	Custom slaughter State inspected
Greenbrier Foods, Inc. Lewisburg, WV	N	Custom and commercial slaughter USDA inspected
Hyde's Meat Packing Enterprise, WV	N	Custom slaughter State inspected
Pioneer Meat Processing Waverly, WV	N	Custom and commercial slaughter State inspected
RLM Butchering and Meat Processing Harts, WV	N	Custom slaughter State inspected
Rolfe's Custom and Commercial Meat Processing, Inc. Ona, WV	N	Custom and commercial slaughter State inspected
Sandy Creek Farms Ravenswood, WV	N	Custom slaughter State inspected
Taylor's Custom and Commercial Meat Cutting Spanishburg, WV	N	Custom and commercial State inspected
Teet's Meat Packing Elkins, WV	N	Custom slaughter State inspected
Tony's Packing Company, Inc. Beckley, WV	N	Custom and commercial slaughter State inspected

Source: WVDA

REFERENCES

- American Lamb Council. "Lamb Marketing Update." American Sheep Industry Association / National Lamb Feeders Association Convention, San Antonio, TX, January 2002.
- American Sheep Industry Association. Industry data, multiple years; situation and outlook information. Paul Rodgers, Deputy Director of Policy, American Sheep Industry Association. Personal communication.
- American Sheep Industry Weekly Newsletter. "Possible Structure Shift in U.S. Sheep Industry." February 21, 2003. www.sheepusa.org.
- Genho, M. R. and G. Schmidt. "Final Report: Enhancing Retail Market for American Lamb." Colorado State University, July 2002.
- Glimp, H.A. "Can We Produce Lambs for \$.40/lb?" Proceedings of the Sheep Forage Production Systems Symposium. Steamboat Springs, CO, July 1991.
- Greek Orthodox Archdiocese of Australia. "Dates of Pascha/Easter 2000-2050." http://home.it.net.au/~jgrapsas/pages/Pascha_dates.htm.
- Kosmin, B. A., Mayer, and A. Keysar. "The American Religious Identity Survey." Center for Jewish Studies, City University of New York Graduate Center, 2001. www.gc.cuny.edu/studies/aris_index.htm.
- Largest Religions Groups in the United States. www.adherents.com/rel_USA.html.
- Leymaster, K.A. "Fundamental Aspects of Crossbreeding Sheep: Use of Breed Diversity to Improve Efficiency of Meat Production." *Sheep and Goat Research Journal*, Special Issue: Breeding for Improvement of Meat Production in Sheep, Vol. 17, No.3: 2002.
- Northeast Sheep and Goat Marketing Program. Directory. www.sheepgoatmarketing.org.
- Northeast Sheep and Goat Marketing Program. "Grades of Goats and Lambs for Northeast Markets." www.sheepgoatmarketing.org.
- McConnell, T. "Where Do You Fit In? Shepherds, Records, and Risk Management." Great Lakes Informational Grazing Conference. Shipshewana, IN, February 2001. www.wvu.edu/~agexten/farmman2/shepwool/index.htm.
- Martinson, S., "Top Chefs Demand the Best Lamb... and They Get it in Western Pennsylvania." *Pittsburgh Post-Gazette*, August 27, 2000.

- Onterio Consultants on Religious Tolerance, "Islamic Seasonal Days of Celebration and Holy Days." www.religioustolerance.org/main_day3.htm.
- Pennsylvania Agricultural Statistics Service, 1996-2001. www.nass.usda.gov/pa/.
- Power, C., "The New Islam," *Newsweek*, March 6, 1998.
- Shelton, M. and P. Rodgers. "Preface and Overview." *Sheep and Goat Research Journal*, Special Issue: Lamb Marketing, Vol. 14, No.1: 1998.
- SID Sheep Production Handbook, 2002 edition. American Sheep Industry Association, Centennial, CO. In press.
- Singh, D. "An Analysis of the Management Decisions of Sheep Producers in West Virginia." Master's Thesis, West Virginia University, 2000.
[On-line Abstract]: <http://etd.wvu.edu/templates/showETD.cfm?recnum=1542>.
- Stepanek-Shiflett, J. "How Much is Lamb Worth?" *Sheep Industry News*, Vol. 6. Issue 8., August, 2002.
- TAMRC Lamb Study Team. "Assessment of Marketing Strategies to Enhance Returns to Lamb Producers." Texas Agricultural Market Research Center Commodity Market Research Report No. CM-1-91, 1991.
- The Worldwide Holiday and Festival Site. "The Islamic Calendar." www.holidayfestival.com/Islam.html.
- Tomek, W. and K. Robinson. Agricultural Product Prices, 3rd ed., Ithaca: Cornell University Press, 1990.
- "Understanding the Islamic Calendar and Others."
www.angelfire.com/oh5/wwa/Ramadan/Muslimcalender.htm.
- United Jewish Communities. "National Jewish Population Survey (2000-01)." 2002. Jewish Virtual Library. www.us-srael.org/jsource/US-Israel/ujcpop.html.
- U.S. Department of Agriculture, Economic Research Service, Monthly U.S. Livestock and Meat Trade. www.ers.usda.gov/.
- U.S. Department of Agriculture, Economic Research Service, Retail Prices for Meat, 2001-2002. www.ers.usda.gov/data/MeatScanner/.
- U.S. Department of Agriculture, National Agricultural Statistics Service, Livestock Slaughter, 1994-2003. www.usda.gov/nass/.

U.S. Department of Agriculture, National Agricultural Statistics Service, Sheep and Goats, 1994-2003. www.usda.gov/nass/.

U.S. Department of Agriculture, National Agricultural Statistics Service, Sheep and Goat Predator Loss, May 2000. www.usda.gov/nass/.

U.S. International Trade Commission, Lamb Meat (Injury Phase) Investigation No. TA-201-68. January 12, 1998

Virginia Agricultural Statistics Service, 1996-2001. www.nass.usda.gov/va/.

Virginia Polytechnic Institute and State University. Virginia market information, 1996-2001. Greiner, Scott, Extension Animal Scientist, Department of Animal and Poultry Sciences. Personal communication.

Ward, C.E., A. Trent, and J.L. Hildebrand. "Consumer Perceptions of Lamb Compared with Other Meats." *Sheep and Goat Research Journal*, Vol. 11, No. 2: 1995.

West Virginia Agricultural Statistics Service, Charleston, West Virginia, 2002. Bulletin No. 32.

West Virginia Sheep and Wool Directory. West Virginia Department of Agriculture, Charleston, WV, 2002.