

Symposium: Small Ruminant: The U.S. Goat Meat Industry and Recent Sheep and Goat Activities at the National Research Council of The National Academies

227 Goat meat production, processing, and marketing in the U.S. K. W. McMillin*, *Louisiana State University Agricultural Center, Baton Rouge.*

The goat meat industry is the fastest growing segment of the U.S. livestock industry. Numbers of all goats were 3,015,000 in January of 2008, with an increase of 4% to 2.5 million head of meat and other goats from the previous year. Drought and other conditions contributed to increased total goat slaughter of 828,000 in 2007 compared with 749,300 in 2006. The annual supply of goat meat available to American consumers from domestic and imported sources continues to increase, but the true demand by ethnic and non-ethnic consumers has not been accurately determined. Imports of goat meat, primarily from Australia as frozen carcasses, have increased by about 10% annually over the past decade, with increasing proportions of the goat meat in boxes as frozen primal pieces or cubes each year. Marketing of live goats is mainly through auctions and livestock traders, although direct on-farm and farmer market sales appear to be increasing. Kid goat carcasses have a dressing percentage of 42 to 52%, with the trotters and kidney and pelvic fat left in carcasses until fabrication. Lean yields of 50 to 70% of cold carcass weight depend upon carcass size, fatness, and amount of bone. A Meat Goat Selection, Carcass Evaluation & Fabrication Guide provides information on assigning selection classification conformation scores to live goats and goat carcasses, evaluating goat carcasses, and introducing fabrication procedures of goat carcasses. Goat meat and muscles can be processed with all of the normal unit processing and preservation operations used for the other meat species. However, more convenient or processed goat meat products, such as precooked or cured items, have not become common in wholesale or retail offerings of goat meat or goat meat products. Ethnic retail consumers are driving goat meat demand for raw chilled meat as cubes even though USDA Institutional Meat Purchase Specifications for Fresh Goat provide for consistent cutting, ordering, and merchandising of primal and retail cuts by institutional and retail meat buyers. Populations of the ethnic groups who are primary purchasers of goat meat have increased at more than twice the 5.3% total U.S. population growth since 2000.

Key Words: Goat, Meat, Processing

228 New NRC recommendations for energy and protein requirements of goats and sheep. B. W. Hess*, *University of Wyoming, Laramie.*

Expression of energy and protein values is one of the first items to consider when discussing new recommendations for energy and protein requirements of goats and sheep. The NE system was used for sheep whereas energy requirements of goats were expressed in terms of ME because NE is not as commonly used in evaluating feedstuffs and insufficient data are available on expressing NE requirements of goats. The metabolizable protein (MP) system was viewed as the most appropriate method of defining protein requirements. This system requires information on factors that influence microbial protein synthesis, the extent of ruminal outflow of intact feed protein, and intestinal digestibility of rumen undegraded protein. Whenever possible, databases of treatment mean observations were constructed from the literature to evaluate components of the Cornell Net Carbohydrate and Protein System for

sheep and the previous Sheep NRC. Although the independent evaluation revealed that one method was not appreciably superior to the other, the Cornell Net Carbohydrate and Protein System was used to describe energy and protein requirements of sheep because this method considers energy and protein requirements and supplies in concert and also includes assumptions allowing prediction of negative BW change. Recommendations for energy and protein requirements of goats were based primarily on a special issue published in the journal *Small Ruminant Research*. An independent evaluation of recommendations for energy and protein requirements of goats was not necessary because this was already conducted by authors of the special issue of *Small Ruminant Research*. Recommendations for energy and protein were felt most appropriate given the information available and interpretation possible when the new NRC was drafted. It was recognized that future research will lead to enhancement or substitution of current energy and protein expressions with more appropriate ones.

Key Words: Goats, Sheep, Energy and Protein Requirements

229 The Small Ruminant Nutrition System (SRNS) model for prediction of energy and protein requirements of goats and sheep. A. Cannas*¹, L. O. Tedeschi², A. S. Atzori¹, and D. G. Fox³, ¹*University of Sassari, Sassari, Sardinia, Italy*, ²*Texas A&M University, College Station*, ³*Cornell University, Ithaca, NY*.

In previous NRC publications, simple empirical equations have been used to estimate energy and protein requirements for sheep and goats. This approach has limited the number of variables that could be accounted for and their accuracy when applied over widely varying production situations. To address this problem, the 2007 NRC small ruminant committee decided to utilize recently developed models to predict site-specific nutrient requirements and supply for sheep. The nutrient requirement tables for sheep were based on the Cornell Net Carbohydrate and Protein System (CNCPS) for sheep, as published by Cannas et al. (2004). Recently, a submodel for goats was added to this model and the name was changed to the Small Ruminant Nutrition System (SRNS). The main goals pursued in its development were: (1) to use a mechanistic approach, (2) to integrate accumulated research knowledge published by different research groups, (3) to differentiate the equations used for different species and breed type only when justified by sound biological reasons, and (4) to integrate energy and protein requirements with a nutrient supply submodel. The main differences between the SRNS submodel for sheep and that for goats are: (1) the energy requirements for basal metabolism differ among genotypes and are higher in goats than in sheep; (2) sheep maintenance energy requirements are adjusted to account for the increase in the size of the visceral organs as energy intake increases, but this correction is not applied for goats; (3) body fat content composition and the energy cost of gain is higher in sheep than in goats; and (4) protein requirements for maintenance are higher in sheep than in goats due to the cost of wool production. Robust evaluations, performed with independent research data, indicated the SRNS accurately predicted the energy balance and live weight gains of sheep and goats.

Key Words: Sheep, Goats, Requirements

230 Historic trends in U.S. sheep production and prospects for the future. H. A. Glimp*, *University of Nevada, Reno*.

Sheep were an important component of the food and fiber chain in the early European settlements in the eastern U. S. With settlement of the west and improved transportation systems, the sheep population began migrating to the western U. S., peaking at 54 million sheep and lambs in 1884 and reaching an all-time high of 56 million in 1942. The industry then began declining, dropping to 30 million in 1940 and continuing to decline until some stability has occurred in recent years. Concurrent with the decline in sheep and lamb numbers has been a decline in wool production and the downstream marketing, processing, and support services for the sheep and wool industry. The National Academy of Sciences report analyzes the factors contributing to these historic trends, the current status of the industry, and identifies current challenges and opportunities for the future viability of the industry. Even though numbers have declined to critical levels to maintain a viable industry infrastructure, the report identifies new developments and opportunities for the future of lamb, wool and milk production through improved genetic, management and marketing strategies.

Key Words: Sheep, Production, Trends

231 Marketing of sheep products: situation, challenges, and opportunities. G. Williams*, *Texas A&M University, College Station*.

The U.S. sheep industry is composed of many allied industries linked together along a complex value chain anchored by sheep production

and extending to varied end use markets. Each of the major industries along the value chain (live sheep, dairy sheep, lamb, wool, and sheep by-products) faces unique demand conditions but also are all linked on the supply side of their markets to sheep production. Consequently, the fortunes of each industry are inextricably linked to one another and depend particularly on the economic health and prosperity of the sheep production enterprise. The dominant feature of sheep production in the United States and, thus, the focus of much producer and policy concern over the years, has been the steady decline in sheep and lamb inventories since the mid 1940s. In turn, the decline in sheep and lamb numbers has restricted supplies of sheep and lamb products to the allied industries and created difficulties in the flow of those products through a shrinking marketing system as producers have struggled to respond to market signals while maintaining profitability. Concerns about the future of the industry led to a Congressional request in 2006 to the National Academies to review the development and current status of the sheep industry in the United States and to examine challenges and opportunities for the future. The committee of industry experts charged with the review by the National Academies has been studying all sectors of the sheep and allied industries since early 2007. Although not ready for public release, the committee's report examines the production and marketing side of each segment of the sheep industry value chain and focuses particularly on the challenges and opportunities facing each segment. On the marketing side, the study considers the factors affecting the flow of live sheep, lamb, wool, dairy sheep products, and other sheep products along the chain to consumers and changes needed and in the offing to improve the profitability and competitiveness of the industry.

Key Words: Marketing, Sheep Products, Value Chain