

GOAT SYMPOSIUM

424 Implications of DHIA for dairy goats. I. Brown-Crowder*, E (Kika) de la Garza Institute for Goat Research, Langston University, Langston, OK.

A small survey of Oklahoma dairy goat producers and American Dairy Goat Association (ADGA) Directors was conducted to evaluate their knowledge of Dairy Herd Improvement (DHI) programs. Of the 50 herds surveyed, comprising a total of 2208 goats, 40% do not use DHIA testing for goats due to lack of tester availability or the overall program costs. Of the 60% on DHI test, 67% utilize an official tester while 32% circle or group test (3 or more producers test each other). All of the herds utilizing an official tester were on standard test. Of the herds surveyed, 55% rated the overall knowledge and service of their tester and local DHI management to be high. However, 55% of the producers rated the overall service of the State DHIA organization and laboratory to be fair to poor. Most producers ranked production statistics, genetic information and management information as the top three important factors to DHI test. Milk quality, reproduction, milk production, feed management and health information were found to be the most useful on DHI records. The use of somatic cell counts as an indication of udder infection was considered unreliable for goats by 60% of those surveyed. Of the 40% not utilizing DHI, 60% would go back on test if there was a goat specific program. Of those surveyed, 25% would be interested in the Am/Pm Timer (APT) testing plan. Of the sampled population, 50% would accept a disinterested third party for verification testing. According to USDA-AIPL, the number of goat herds and does on DHI plans decreased from January 1, 1997 (728, 14,097) to January 1, 1998 (606, 11,840) respectively. In summary, dairy goat producers could benefit from goat specific DHI paperwork and testing programs, better DHI service and optional testing plans to increase the number on DHI test. Further research is needed to evaluate DHI testing plans such as AM/PM, Standard and Every Other Month for dairy goats.

Key Words: Goats, DHI

425 Genetic evaluation of yield and conformation traits of dairy goats. G. R. Wiggins* and S. M. Hubbard, *Animal Improvement Programs Laboratory, Agricultural Research Service, USDA, Beltsville, MD.*

Genetic evaluations of dairy goats are calculated annually by USDA from data available through the American Dairy Goat Association (ADGA) and the Dairy Herd Improvement system. The number of does in test plans acceptable for use in genetic evaluation was 12,951 in 1997; participation in linear appraisal programs was 4508 does. For evaluation of yield traits, an animal model similar to that for dairy cattle is used, but analysis is across breeds. Lactation records for the first six parities of does born since July 1973 and kidding since January 1976 are edited with limits appropriate for goats, projected to 305 d, and adjusted for kidding age and month. Evaluations are computed for milk, fat, and protein yields and component percentages; an economic index for milk, fat, and protein (MFPS) is calculated based on economic values for dairy cattle. A multitrait animal model is applied to 14 linear type traits and final score. By applying a canonical transformation, a single-trait calculation method can be used. Annual genetic progress as a percentage of mean breed yield ranged from 0.0% for milk, -0.2% for fat, and 0.0% for protein for Toggenburgs to 0.9% for milk, 0.9% for fat, and 0.8% for protein for Nubians. Trend for type traits across breeds for does born in 1995 was 0.6 for stature; 0.4 for rump angle; 0.3 for teat placement; 0.2 for strength, suspensory ligament, and teat diameter; 0.1 for rump width; 0.0 for final score, dairyness, fore udder attachment, rear udder arch, udder depth; and -0.1 for rear legs and rear udder height. Two production-type indexes are computed by ADGA with 2:1 and 1:2 weightings for MFPS and predicted transmitting ability for final score. A test day model that is being developed for yield traits of dairy cattle will be adapted for dairy goats to account better for environment, testing variation, and differences in lactation curves.

Key Words: Dairy Goat, Genetic Evaluation

426 Breeding and management systems for meat goat production. J. C. Paschal*, *Texas Agricultural Extension Service, Corpus Christi.*

Interest in U. S. meat goat production is increasing due to an increased interest in agricultural sustainability and diversification, the introduction of the Boer goat from South Africa, and the elimination of the Wool and Mohair Act. Meat goat production prior to 1990 was primarily with indigenous goats (Spanish, wood, or brush goats) and concentrated in Texas (with 90% of the Angora and meat goat herds) and the southern U.S. All goats (meat, hair, and dairy) were considered meat goats at culling. Selection for genetic improvement in meat goats was nonexistent except in a few isolated instances. Most meat goats lacked growth rate, size, and muscling but were fertile, prolific, and adapted to a variety of environments. No management, except culling for sales or for meat (kids and yearlings) and the introduction of new bucks or nannies, occurred. As the interest in meat goats increased, producers utilized crossbreeding with Nubians to improve the meat characteristics of existing stocks. Producers realized a lack of knowledge of and supplies for goat husbandry among agricultural scientists, extension personnel, veterinarians, and the agribusiness industry. The introduction of the Boer goat stimulated speculative interest which aided in rectifying this lack of knowledge, especially in nutrition, health, genetics, reproduction, fencing, and predator control. Currently, commercial meat goat breeding systems rely primarily on crossbreeding, usually with some Nubian but more likely Boer influence. There are a number of "pure" Spanish herds which have improved meat production through within herd selection. Most large herds kid annually and are exposed year long. Smaller herds use accelerated kidding management. Most goats are raised on pasture or native range although small farm flocks are growing in number. Most herds use predator control methods directed against dogs and coyotes. Marketing is still sporadic and unorganized (kids and culls). Agribusiness has improved its knowledge of goats. Husbandry products, supplements, and feeds for goats are now readily available, but most goat raisers use cattle or sheep herd health products. Agricultural colleges are addressing the lack of knowledge and skills of their professional advisors.

Key Words: Meat Goats, Production Systems, Management

427 Current market trends and the potential for meat goat production. T. A. Gipson*, *Virginia State University, Petersburg.*

The demand for goat meat in the United States has continued to increase dramatically over the last two decades. The number of goats slaughtered at federally inspected slaughter plants has increased quadratically over that period. The number of goats slaughtered is still significantly less than that of cattle or sheep; however, goat numbers are the only one of the three that have significantly increased over that period. Regional differences exist in the distribution of federally inspected slaughter plants that slaughter goats and the number of goats slaughtered. Slaughter plants and slaughter numbers are concentrated on the Eastern seaboard, particularly in the northeast, generally indicating centers of high demand. Since the beginning of the decade, importation of chilled/frozen goat meat has also increased significantly while exportation of goat meat has decreased quadratically. In 1996, the value of the imported goat meat exceeded \$5 million. That year, the United States imported goat meat from only two countries, Australia and New Zealand, with Australia providing 91% of the import tonnage. Goat meat that was once exported is now being diverted to satisfy domestic demand. The demand for goat meat is year-round; however, in the two weeks prior to Easter, the number of domestic goats slaughtered doubles. The increased demand for goat meat at Easter is predominately attributed to the niche "Easter kid" market. The portion of the American population that prefers goat meat appears to be increasing. Census data indicates that the majority of the approximately 61,000 immigrants per month over the last decade are goat meat consumers. The three largest goat consuming ethnic populations that are driving the goat meat trade in the United States are Hispanics, Muslims and the peoples from the Caribbean. Recent initiatives have focused on increasing goat meat consumption among the non-traditional consumers, i.e., Americans of European ancestry by developing packaged retail cuts of goat meat that can be sold in supermarket chains and to restaurants.

Key Words: Goat, Markets, Potential

428 Use of the goat in the biotechnology industry. R. A. Godke*, B. C. Reggio, J. A. Carter, R. A. Cochran, and R. S. Denniston, *LSU Agricultural Center, Baton Rouge, LA.*

Recently, the domestic goat has become a prominent force directing the development of the new biotechnology industry. As physiologists, we were pleased when researchers developed effective estrous synchronization and artificial insemination methodologies for the domestic goat. Many of us celebrated when our colleagues developed embryo transfer and freezing technologies for these animals. Our lab help develop methodologies to produce genetically-identical twins from splitting the goat embryo and methods for *in vitro* fertilization with *in vitro*-matured goat oocytes. We stated openly that many of these research contributions would raise goat production to a new economic level in the developed countries. However, the goat industry remained sluggish, until a frenzied interest in the African Boer goat began peaking in the USA. The reproductive technologies that had previously developed for the domestic goat then were in high demand by investment-minded individuals hoping to exploit this goat breed in the USA and Canada. The Boer goat is a great animal, however, the fad was short lived and the investors subsequently redirected their interest. In the early 1990s, Dr. Karl Ebert reported producing transgenic goat offspring at Tufts Univ. As adults, these transgenic goats were able to produce specific human proteins in their milk. This was not a *shock* to scientists, since transgene expression had been previously reported in the mammary glands of mice. This time, however, the transgenes were incorporated into animals that had been selected for milk production, thus causing the biotechnology companies to become interested in both this new technology and the domestic dairy goat. Since then, several of the most prominent biotechnology companies have begun to use the transgenic dairy goat to produce a multitude of human biopharmaceuticals. Several of these milk-derived products are in final testing in human trials at present. The production of recombinant proteins in the milk of transgenic animals now appears to have economic potential far beyond what the scientists initially realized.

Key Words: Goat, Transgenic, Milk