



# ANIMAL SCIENCE FACTS

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## Extension Animal Husbandry

Department of Animal Science

### BREEDS AND PRODUCTION TRAITS OF MEAT GOATS

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#### Meat Goat Breeds

Goats of any breed or crossbreed are eventually slaughtered for human consumption. With the exception of the South African Boer goat imported via New Zealand in early 1993, there are no true meat goat breeds in the U.S. However, there are a few breeds that stand out as more specialized for meat production. These breeds are the Spanish, Myotonic, Nubian and Pygmy goats.

A clear indication that the meat goat industry is expanding is shown by the 13% increase in the number of goats sold through NC auction markets, from 27,874 in 1995 to 31,503 in 1996. By the end of 1997 and 1998, 34,160 and 35,116 goats had been sold through NC weekly auction markets, respectively, additional increases of 8.4 and 3%, followed by a 3.9% decrease in 1999, as more goats were sold through marketing channels not controlled by the NCDA. A few years ago, prices of Boer breeding stock decreased enough to become affordable to small producers. Consequently, crossbred animals having Boer genetics are now being sold for meat at auction markets or under private treaty sales and buyers and consumers already have recognized the superior carcasses of those animals.

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#### Boer

The Boer goat of South Africa owes its name to the Dutch word "boer" meaning farmer. The origin of Boer goats is vague and probably rooted in indigenous goats kept by Hottentot and migrating Bantu tribes, with a possible infusion of Indian and European bloodlines. The present-day improved Boer goat emerged in the 20th century when South African farmers started breeding for a meat type goat with good conformation, high growth rate and fertility, short white hair and red markings on the head and neck. The South African Boer Goat Breeders' Association was founded in 1959 to establish breed standards for the emerging breed. Since 1970 the Boer goat has been incorporated into the South African National Mutton Sheep and Goat Performance and Progeny Testing Program, which makes the Boer goat the only known goat breed routinely involved in performance and progeny tests for meat production. There are approximately 5,000,000 Boer goats in Africa, of which 1,600,000 are of the improved type.

New Zealand and Australian companies have imported the Boer goat into their respective countries for improving their own meat goat industries. In April of 1993, the quarantine restrictions for the New Zealand Boer goats expired and animals became available for importation into the U.S. The Australian Boer goats were released in October 1995. In June 1993, the North American Boer Goat Association was founded, breed standards were established and registry of animals was begun.

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According to New Zealand researchers, the plane of nutrition plays a greater role than the light/dark cycle for Boer goats to breed out of season.

<i>Live weight (lbs)</i>	<u>Male</u>		<u>Female</u>	
	<i>Avg</i>	<i>Max</i>	<i>Avg</i>	<i>Max</i>
Yearlings	100	180	80	135
Adults	250	290	140	200

### **Spanish**

The Spanish goat came originally from Spain via Mexico to the USA. It is now a meat type goat found primarily on or around the Edwards Plateau of Central Texas. The Spanish goat has the ability to breed out of season and is an excellent range animal because of its small udder and teats. In addition, Spanish goats are usually characterized as being very hardy, able to survive and thrive under adverse agroclimatic conditions with only limited management inputs. Within the general group of "Spanish goats" there are those that are purely Spanish, whereas others represent an amalgam of all genotypes introduced to the area. There have been obvious infusions of dairy and Angora blood in many Spanish herds but no organized attempt has ever been made to use them for milk or mohair production. The terms "wood" (Florida), "brush" or "briar" (North Carolina, South Carolina), "hill" (Virginia), and "scrub" (Midwest, Pennsylvania) goat tend to be used in the Southeast and elsewhere to refer to Spanish goats. Until recently, these goats were kept mainly for clearing brush and other undesirable plant species from pasture lands. In recent years, the escalating demand for goat meat and the expanding interest in cashmere production have focused attention on the Spanish goat. Current estimates of the Spanish goat population is around 500,000 head. Several Spanish goat producers in Texas have been intensively selecting for increased meat production for the past several years. From information obtained from these producers, these "selected" Spanish goats appear to greatly outperform the ordinary Spanish goat used primarily for pasture maintenance.

### **Myotonic**

The Myotonic goat has several aliases including "Tennessee Stiff-Leg", "Tennessee Wooden-leg", "Nervous Goat", "Fall-Down Goat" and "Fainting Goat". The Myotonic goat is a very meaty and muscular animal. This goat breeds out of season, and in many herds it is usual for does to kid twice a

year. Number of kids varies from single to four.

The Myotonic goat suffers from a recessive trait called myotonia. When frightened, it experiences extreme muscle stiffness causing extension of hind limbs and neck. In this startled state, if unbalanced, the animal will topple over like a statue or will stand immobile until the attack, usually lasting only 10-20 seconds, passes. According to a Texas neurologist, this type of involuntary isometric muscle contraction could build a more tender muscle than a muscle developed by strenuous use.

Little is known about the earliest history of this breed except that in the early 1880's a man appeared in Marshall County, Tennessee with a cow, three does and a buck of a unique strain. These four goats suffered from myotonic spells and were purchased by a Dr. Mayberry who propagated the breed. The population of Myotonic goats is informally estimated to be around 3,000 to 5,000 head, with herds found primarily in Tennessee and Texas.

### **Nubian**

The Nubian goat, also called Anglo-Nubian, is considered a dual-purpose goat breed used for milk and meat production. This breed was developed in England and is a composite of dairy goat breeds from India, Europe and Africa. Brought into the USA at the beginning of this century, the Nubian has become the most popular US dairy goat breed, with over 100,000 registered breeding stock.

### **Pygmy**

The Pygmy is a dwarf, heavily muscled and short legged goat from Nigeria in West Africa. The Pygmy found its way to the Caribbean and North America as a by-product of the slave trade in the 18th century. In West Africa, the Pygmy is used almost exclusively for meat production. The pygmy is well adapted to humid climates, it usually breeds all year and twinning is frequent. In the USA, the Pygmy has so far been raised mainly as a pet and as a show animal, and over 30,000 animals are currently registered with the National Pygmy Goat Association.

The Piedmont Pygmy Goat club has three sanctioned shows a year: the NC State Fair Pygmy Goat Show and two other shows held at the Agricultural Barn in Greensboro in spring and fall.

### **Kiko**

The Kiko was developed over two decades of

intensive selection from New Zealand feral goatstock. The Kiko is thought to be a vigorous, hardy, large frame and early maturing animal that doesn't need pampering.

### **Production Traits**

Four key traits to be considered for genetic improvement in goats used primarily for meat production are the following: 1) adaptability to environmental and production conditions, 2) reproductive rate, 3) growth rate and 4) carcass characteristics. Of these four production traits, only carcass characteristics are not readily measurable on the farm.

#### ***Adaptability***

This trait is the most important of all the production traits. The profitability of any meat goat enterprise may be greatly diminished if an animal's ability to survive and reproduce is impaired by the production environment. The goat has proven to be perhaps the most adaptable of all the domesticated livestock. Indeed, the goat survives worldwide in a wide range of environmental conditions. However, when taken out of one environment and placed into another, domesticated livestock of any species may not always realize its production potential. Therefore, we might expect Spanish goats to perform differently in the Carolinas and Virginia than they do on the arid Edwards Plateau of Texas. Similarly, Boer goats might perform differently in South Africa than they do in North America. In addition, different degrees of adaptability exist between breeds. For example, we might expect Spanish goats to be inherently better adapted to extensive, browsing conditions than Tennessee Stiff-Leg goats.

Adaptability is a lowly heritable trait because natural selection has already reduced the genetic variability. Therefore, adaptability will respond slowly to selection.

#### ***Reproductive Rate***

In animals kept primarily for meat production, reproductive rate is the single most important factor contributing to the efficiency of production. Reproductive traits of interest in a meat goat enterprise are conception rate, kidding rate, and ability to breed out of season.

In general, goats have a high reproductive rate with conception rate not being a problem. Several studies

have demonstrated that although twins and triplets have lower birth and weaning weights and slower growth rates, they produce more total weight of kid per doe per year. Therefore, prolificacy, defined as the number of kids born per doe, is an important reproduction trait. Goats that have evolved in the temperate zones of the world tend to be seasonal breeders, with females coming into estrus in the fall and anestrus occurring in late spring. This breeding pattern does not always coincide with the optimal marketing period of weaned kids. On the other hand, goats from tropical regions are non-seasonal breeders and kid all year-round. Therefore, incorporating this trait of non-seasonality into a meat goat enterprise would be advantageous.

#### ***Growth Rate***

Growth rate can be effectively divided into two periods: pre-weaning average daily gain and post-weaning average daily gain. A high pre-weaning average daily gain not only reflects the genetic potential of the growing animal, but also the mothering ability of the doe. In some production systems, kids are sold at weaning and therefore pre-weaning average daily gain is an important production trait to consider. In other production systems kids are sold as yearlings or as older animals and post-weaning average daily gain becomes an important production factor.

#### ***Carcass Characteristics***

Carcass characteristics of interest are dressing percentage, anatomical distribution of muscle and the ratios of lean:fat:bone. Generally, the dressing percentage of goats is around 45%. As an animal grows, the percentage of fat in the carcass tends to increase, the percentage of bone tends to decrease, whereas the percentage of lean muscle stays about the same. The portions of the carcass with the largest muscle mass are the leg and shoulder. However, percentage wise, these portions tend to decrease as the animal grows.

### **Summary**

With the exception of the Boer goat, meat goat breeds are lacking in some aspects of performance or have not yet been tested in our production systems. Using a set of scales and good record keeping, meat goat producers can readily collect the information needed for the selection of animals possessing the economically important traits described while keeping carcass characteristics in mind.