

## Selection for Commercial Meat Goat Production

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### Purpose

**The purpose of this publication is to identify and prioritize those phenotypic characteristics that have a significant economic impact on the success of a commercial meat goat operation.**

### Introduction

The US meat goat industry has changed tremendously since the introduction of the Boer goat in 1993. Prior to the arrival of Boer goats, purebred goat registries in the US were limited to Angoras, dairy breeds and novelty breeds like the Pygmy, Nigerian Dwarf and others. The relatively large “Spanish” or meat goat population did not maintain a formal breed registry. A few individual breeders maintained within-herd production records, parentage information or breeding records. For the majority of the Spanish goat population, selection and mating programs were very extensive and often heavily influenced by nature’s “survival of the fittest” selection program.

Introduction of the Boer goat brought attention, prominence and prestige to the US meat goat industry. Breed and industry associations were formed and interest in the exhibition of goats, both breeding animals and youth market projects, has swept the nation. Associated with all these new “opportunities” are specific selection criteria. While most all criteria have either a direct or indirect economic value attached, the value of a specific parameter (ex. coat color) may not be the same across all production systems.

### Goat Production Systems

For this discussion, goat production systems are characterized as follows:

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| Commercial | The primary goal is the production of goat meat. Typically, kids are sold at weaning or soon thereafter. Replacement females are typically raised and retained while replacement sires are generally purchased. Many choose to employ a continuous mating system whereby bucks remain with does year-round. Among the larger operations, multiple sire mating groups are common, so the exact parentage is often unknown. |
| Purebred   | May or may not maintain breed registration papers, but the herd is predominately of one breed or of known parentage and breed composition. For example, Boer goats with less than or equal to 1/32 of another breed are considered purebreds. Offspring from a purebred operation are typically thought of as potential replacement breeding animals, yet many are sold as slaughter kids for meat production.            |

Wethers	Primary goal is to produce wethers for junior market shows. Phenotype, selection criteria and management likely differ from all other production systems. Breeding season is dictated by rules of the show(s) for which wethers are intended.
Seedstock	Within any breed of livestock, a <i>few</i> true animal breeders make significant contributions to the advancement of the breed. These are the seedstock breeders. The name and/or registration number and genetic influence of animals from their herds are found in numerous pedigrees throughout the breed registry.

Some goat owners may be involved in more than one of these production systems. Regardless of the type of operation, there are four elements that must be considered in a prioritized order, *assuming* long-term stability is profit dependent:

- 1) A viable market for the product(s) must exist.
- 2) Market price must frequently exceed the cost of production.
- 3) Reproductive performance is the single most significant factor affecting profitability.
- 4) The genetic potential for growth must be matched with nutrient and/or natural resources to attain a cost effective level of production.

### **Physiological Maturity**

Some would argue that the extensive “Spanish” goat operations of the past are perhaps the most profitable approach – minimal management inputs and minor production expenses, coupled with admirable reproductive performance and weaning percentages, yielded profits. There was very little expense associated with the goats that were captured and sold. However, many producers allowed the other livestock and/or hunting enterprise to carry the overhead, maintenance or grazing expenses, so we may remember a more profitable situation than actually occurred.

Nonetheless, an attribute of the Spanish goat that contributed to its prolificacy was a relatively rapid rate of physiological maturation. In continuous mating systems, it is not uncommon for doe kids to mate and conceive during the fall following the spring they were born. Earlier physiological maturity shortens the generation interval and, over the long-term, will increase production, especially in a continuous mating system. If controlled breeding is practiced, the earlier maturing females will often cycle and settle earlier in the season.

### **Mature size/Body shape**

Physiological maturity is correlated with mature size – animals that mature early are smaller. Very few mature “Spanish” does in average body condition weigh over 90 pounds. In addition, Mother Nature’s “selection of the fittest” program preferred a smaller mature size animal with lower nutrient requirements that could survive on poor to fair range conditions and endure prolonged periods of drought. If nutrition is potentially a production-limiting factor, smaller mature body size is an advantage. In those few

situations where forage and feedstuffs are inexpensive and abundant, large mature size, greater milking ability, and rapid growth potential are an advantage.

### **Functional Criteria**

**Mouth**            Teeth on the lower jaw should fit the dental pad. The lower jaw can either be too long (referred to as an overshot jaw or monkey mouth) or too short (referred to as undershot jaw or parrot mouth).



**Horns**            The horns should be strong and well placed. The space between the horns should be at least 3 inches wide. Goats with narrow horns can more easily get hung in a shrub or tree or cause injury to the leg of another goat. Narrow horns with flat, sharp inside edges are the most undesirable.

**Udder**            The udder has two halves that should be similar in size. The udder should be well suspended by a broad, strong ligament attached high in the twist. Pendulous udders should not be tolerated. Ideally, does would have one functional teat per side. Multiple teats (more than two per side) should not be tolerated. Teats should be small and well placed, such that a newborn kid can follow the underline of the doe to the rear flank, find the teat, and be able to nurse. Teats that lose their integrity (bulbous, bottle-shaped, etc.) can preclude nursing (and survival) by newborn kids. The floor of the udder and the teats should remain above the hocks.



**Testicles**        The scrotum should be well attached and testicles should not swing outside the flanks or out behind when a buck is on the move. A pendulous scrotum in young bucks is not desirable. A one-inch or less split in the bottom of the scrotum is acceptable. Testicles should be the similar in size and consistency and should be suspended evenly. Yearling scrotal circumference should be at least 25 centimeters.



**Skeleton**        The skeleton is the framework that holds the goat together. The ideal goat is balanced – all parts of the body appear to be in proportion and fit together smoothly.

The neck should come out and up from the top of the shoulder. The topline should be straight and strong. Weakness or a pinched appearance immediately behind the shoulders is undesirable. The hip should not be steep. Width across the hip is an indicator of growth potential and increases pelvic area and facilitates the birthing process.



Width of body is a desirable trait. The animal should be wide between the front legs and have depth in the chest floor. Depth of body and spring of rib allow for greater body capacity.

The hind legs should be straight and be positioned on the corners of the animal's body. Incorrect hind legs are often a result of incorrect hip structure. Comparing the two white wethers, the wether on the left is steep in his hip and narrow through his pelvis. Consequently, he stands narrow and in at his hocks (cow hocked). The wether on the right has ideal hip structure and the result is obvious.



**NOTE:** Skeletal defects (coarse shoulders, weak backs, bad mouths or crooked legs only get worse with age. Do not fall victim to the old trick “*All he/she needs is a little time or foot trimming.*”

#### Muscle

Goat owners are actually in the business of producing food – lean red meat. Reliable indicators of muscling are circumference of the forearm, width of the loin, shape of the leg and depth of the twist. Again, compare the white wethers. The wether on the right is wider along his loin and across the rump, more expressive in his leg and deeper in the twist.

**Caution:** Be sure the evaluator appreciates the difference between muscular goats and fat goats. As goats fatten, they take on a smoother, more rectangular appearance.

#### Pretty Points

Color and color patterns may have economic significance to some producers. White goats are easier to see in rough terrain and/or dense vegetation. Goats with a red head and white body are sometimes more marketable due to their assumed Boer parentage. Some buyers prefer solid colors while others like a paint color pattern. Head shape, ear length and shape, and skin pigmentation are also included here.

Bottomline – Unless they die in the pasture, all goats are meat goats and when the skin comes off, they are all the same color underneath.

This concludes the selection criteria for live animal evaluation. Yet, for the commercial producer, there are additional criteria that are very helpful during the selection process.



## **Production Records**

If records are available – use them! Too many goat owners keep records but never use them. Records allow the evaluator to go the next step, beyond what the goat looks like, to how they actually perform. Often some of the most productive does are not the most attractive.

### **Extensive Production**

In an extensive operation with large pastures and large herds of goats, individual records may not be feasible. Does may be mated in multi-sire groups and kidded in the pasture, so sire, birth date or birth status (single, twin, triplet) records may not be available. In such cases, retain the larger kids at weaning. These kids were likely sired by the most aggressive bucks and reared by a doe that bred early in the mating season. This approach will discriminate against kids reared as a twin or triplet. However, fecundity is seldom a problem in goats. Reproductive performance has a low heritability, so greater gains can often be made by management changes.

### **Intensive Production**

Most producers managing smaller herds (less than 100 does) record sire and dam, date of birth and birth status. These records will facilitate more accurate selection decisions. Does that do not breed, consistently breed late, fail to birth live kids, fail to mother their kids, do not milk, or wean small kids should be removed from the herd and sold through a commission company.



### **Postweaning Performance**



Rearing status and milk production by the dam have a major influence on preweaning growth and performance. The true measure of an animal's ability to grow is best evaluated amongst their contemporary group after weaning. When evaluated as yearlings, many of the size and condition differences that were obvious at weaning have disappeared.

Make an initial selection at weaning to eliminate all obviously undesirable animals. Pasturing or feeding animals from weanlings (at 100-150 days of age) to yearlings (11-12 months old) is expensive and is not recommended unless the yearlings can be sold for a premium to cover the postweaning pasture and feed costs and any death loss that may occur.

### **Conclusion**

Goat owners have different production environments, management systems and personal preferences, so seldom will any two selection programs be the same. Decide which traits or attributes have the most economical significance and pay close attention to all them. Then use personal preferences and pretty points to make the final keep/cull decisions.

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