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SUITABLE BREED AND ANIMAL SELECTION FOR PRODUCTION EFFICIENCY

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Abstract

Several goat breeds are available in the U.S. Selection of the breed should consider farm goals, production systems, markets and resources. Animal selection for breeding stock production and marketing needs to focus on breed characteristics, animal conformation, show winnings and animal pedigrees. Establishing at least one consistent market to include in a business/marketing plan that results in farm profitability prior to animal purchase is critical. After determining breed, animal selection will be critical, including choosing sellers, productive males and females with performance records, show animals, and animals with parasite resistance. For many farms, purchasing healthy, productive animals from sellers raising animals in a similar manner and environment as the buyer helps ensure animal production efficiency and thus farm profitability. Breed and animal selection research should start before investments are made in a farm to help support productivity and profitability and should consider goals, production system, markets and resources.

Keywords: Suitable Breed, Animal Selection, Production Efficiency

Introduction

There are several goat breeds available in the United States, though not nearly as many as there are sheep breeds. Determination of a breed to raise on a farm should include consideration of the farm goals, production systems, markets and resources. Different farms have goals that should fit the owner. Is it a hobby or homestead enterprise, mostly for enjoyment and perhaps some products for use by the family? Is it a business that needs to support itself only, support up to one salary or support the whole family? Breeds or crossbreeds used may change based on the answer to those questions as well as the access to markets willing and able to purchase animals or products at a price that will be profitable based on the farm goals.

Production Systems

It is easy to understand how the production system could impact breed selection. Goats were bred over many years to yield primarily milk, fiber or meat, though there are some breeds or breed types considered dual-purpose (i.e., cashmere and meat, milk and meat), and animals not meeting requirements for one part of a system, even if not a dual-purpose breed, would eventually become part of the food system. For example, animals not producing enough milk or that do not have the fiber quality required to maintain profitability would not be kept or sold for breeding. Outside of a pet market (which is very small), most of these animals would then be marketed as part of the meat industry.

Most production systems would allow for sales of some breeding stock if animal quality and performance are high, but if breeding stock is going to be the market focus, additional selection criteria would apply. Selling registered (papered) animals would require not only being able to choose animals with good conformation (how the animal is put together; judging/grading criteria) and performance, but also making sure that purchased animals meet the criteria for registration for that breed (i.e. coat color, horn style, teat numbers, etc.) and possibly checking for popular

pedigrees. It often takes intense marketing efforts, including possibly showing in breed shows (and winning) or traveling with animals or pictures of animals to breed-related events to become well-known and profitable in the breeding stock industry. Sales of commercial (non-registered) or crossbred quality breeding stock would be possible with less marketing effort if the breed is popular and the farm has a good reputation as a responsible seller with healthy animals.

The purchase and marketing of show animals is the most resource-intensive production system. Understanding of conformation and what the judge is looking for in the show ring (which often changes with time and location) would be critical to buying animals that would be suited for marketing offspring. Animals with winning, or just popular, pedigrees will be expensive and selling of show stock often requires showing and winning which is time and capital (money) intensive. In addition, show animals or expensive breeding stock may require special housing and hauling equipment to avoid animal injury or loss.

Resources

Resources to evaluate before breed and animal selection include those already owned as well as the capital (funding) to purchase those that will be needed. If the goal is to sell milk products for human consumption, most states require Grade A dairy licensing (some states may allow Grade B for some products). The resources to start a Grade A dairy should be researched, working with the State Department of Agriculture's Dairy Division to determine regulations required by State and Federal law. As with any enterprise, the market for the products should be researched to determine if it will be profitable enough to sustain the system and if the labor requirements are acceptable. Even with a meat production system, some breeds require more labor, housing or feed resources than others or are more expensive to purchase and may be difficult to market. For fiber production, understanding the harvesting and processing labor and costs compared to what you may get from the product at the market is critical as well.

Marketing

Establishing at least one consistent market to include in a business/marketing plan that will result in farm profitability prior to animal purchase is critical. Understanding what local markets require is important in deciding if the market is appropriate. If the farm owner loves production but does not enjoy negotiating prices, providing convincing sales pitches or hosting potential buyers on the farm, direct sales, though often more profitable, should not be considered unless someone else involved in the operation is willing to take on the chore of marketing. If the closest profitable market for a meat production system is two hours away and requires the processing of animals into meat products, the cost of travel, animal processing and permit requirements for selling meat should be considered in the marketing plan.

Breeds

The primary fiber production breed of goats is the Angora, but many goats have a thick, downy undercoat of cashmere produced in the greatest amounts in the winter. Goats with a large amount of high-quality cashmere are selected and bred for this luxurious fiber. Though there is not a specific cashmere goat breed, there are guidelines for the overall color, quality and length of fiber marketed as cashmere (Cashmere Goat Association, 2018). Angora goats are not known for meat production (Oman et al., 2000) and cashmere goats are also not chosen for muscling, but animals being used for fiber might be crossbred to a breed selected for meat to increase muscling and

expand marketing opportunities. Proper feeding is required to support high fiber quality and yield, including protein and energy supplementation (Jia et al., 1995; McGregor, 1988).

For milk production, farm goals also play a large role in breed selection. Nigerian (West African) Dwarf goats are small, so require fewer resources and may be easier to handle, but animals specifically selected for milk production can provide up to a quart a day of high milk/butterfat (6-10%) over a 305-day lactation (Storey, 2018) and some research has shown parasite resistance in their native county (Chiejina and Behnke, 2011; Chiejina et al., 2015). Selection for moderate milk production in this breed or in the Nubian might allow for the female to raise her offspring with some milk left over for human use if twice daily milking or high volumes of milk are not desired. This would be difficult with high producing breeds.

Nubians are considered a dual-purpose (milk and meat) breed with lower milk volume in general but higher butterfat (nearly 5%). The higher producing breeds generally have lower butterfat (3-4%) and include the Saanen (most common in large commercial dairies, highest average milk yield), French Alpine, Lamancha (very small, almost non-existent ears) and Toggenburg. For more detailed information about dairy goat breeds and production, contact the American Dairy Goat Association (adga.org; Storey, 2018).

There are very few purebred meat goat breeds in the United States. The Boer goat, with the traditional white body and red head, is likely the most recognized today. It was developed for muscling and growth and often excels in the show ring. The high genetic potential for growth generally means higher nutrient requirements (high amounts of quality feedstuff), and because the breed was developed in a dry, arid region of South Africa, it often experiences parasite (worm) issues in the warm, wet areas of the United States. The Savanna goat breed was developed in the same region of South Africa in a similar manner, also for muscling and growth.

The Kiko meat goat breed was developed in New Zealand for low input traits and since has been selected for growth by some people. As such, this breed may do well in a pasture-based system. Although not a recognized breed, the Spanish goat, often considered a lower input breed, is tracked for relative purity by the Spanish Goat Association and consists of several 'lines', some of which are better adapted to warm, humid (parasite-abundant) climates than others. A smaller breed, the Myotonic, Fainting or Tennessee Fainting Goat has heavy muscling (only if it 'faints', or stiffens which builds the muscles like weight lifting), and may offer some entertainment (or frustration) when handling animals.

Although developed originally as a meat goat, due to its small size, the Pygmy goat breed is often raised as pets or for showing. Past breeding for a small size may result in an increased number of birthing problems. For example, Pygmy goats represented the greatest number of goat breeds in those requiring a C-section in a 2004 report (Brounts et al.) so care should be taken, and questions related to birthing ease asked of the seller if this breed is selected. There are a few other breeds available and more information may be found at Oklahoma State University's livestock breeds website, a site that includes goat breeds both in and outside of the United States (www.ansi.okstate.edu/breeds/goats).

Animal Selection

Once breed (or breeds for crossbreeding systems) is determined, animal selection will be critical, including choosing sellers (i.e., avoid sale barns), productive males and females with performance records, possible show animals (with winning records) and animals with parasite resistance. For many farms, the purchase of healthy, productive animals from sellers raising animals in a similar manner and environment (i.e., location) as the buyer will help ensure animal production efficiency and thus farm profitability. To find sources of animals, specific breed associations may host websites with member information and classified ads, farm websites may be available, general classified ad websites, agricultural journals, and social media sites may provide information about possible sellers.

Sale (auction) barns group animals from many different sources in a crowded environment (exposing them to potential diseases) and are often the places that owners take animals that are not suitable for breeding due to injuries, age, disease, poor genetics, low performance or other reasons. It is much better to find a reputable breeder of quality animals from which to buy breeding stock. A sale barn may be a place to determine what the minimum sale price should be and a place to meet other breeders. The sale barn owner may be able to help you source appropriate animals for a fair commission, or fee, and some sale barns host special sales for healthy breeding stock throughout the year. All animals new to the farm should be quarantined (isolated from any contact) from all other animals for at least 30 days. If animals go through a regular livestock barn sale, a longer isolation period and/or disease testing prior to herd introduction should be considered.

When selecting individual animals for purchase, remember that males provide genetics to all offspring and thus impact the herd to a great extent, especially if replacement females sired by them are kept for breeding. It is therefore suggested that special attention is paid to selecting the best buck possible and that bucks are replaced regularly to make the most genetic improvement. The use of males that have been performance or genetics tested (have estimated breeding values or records of superior performance within a contemporary group on-farm or at a performance test site) is strongly recommended.

Selection Tips

Although there may be exceptions or additions that should be considered based on the production system (especially for dairy goats), below are general tips for choosing individual animals for a goat herd.

Select animals that:

- Were born and raised twins or better; parents were born and raised twins or better
- Had good growth rates (heavy weaning weights, good post-weaning growth)
- Have proper overall body structure (dental pad and teeth meet evenly, no extreme sway or dip in back; legs are not crooked, especially if expensive show/breeding stock)
- Have two normally shaped teats; no fish/fused teats; no small, non-functioning teats
- Are apparently healthy (no abscesses/bumps, lameness, runny nose, swollen joints, scabs on face or legs, diarrhea/scours or pale eyelids)
- Do not have malformed hooves
- Do not need to be de-wormed often
- Are not aggressive towards people (intact males are more prone to this)

Select males that also:

- Have strong male features and behavior
- Have two testicles outside the body that are normally sized for age with no swellings, bumps or scar tissue
- Do not have a split scrotum over 1”
- Passed a breeding soundness exam and/or is a proven breeder

Select females that also:

- Are no more than three years old
- Birthed and raised healthy twins every year since they were two years old
- Have a well-formed and attached udder with no swellings, bumps or scar tissue
- Have normally formed teats that are not too large for newborn kids
- Were from a mother birthing and raising twins or better each year
- Never prolapsed (uterus, vagina or rectum came out of the body)
- Have a deep body for carrying kids

For more information on goat breeds, selection and production, contact your local county extension office or Land-Grant University. The Appendix also shows photos of several activities and breed types.

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Appendix



Figure 1. Goats with Guardian Dog; Photo by Susan Schoenian



Figure 2. Goat Show; Photo by Niki Whitley



Figure 3. Boer Crossbred Females; Photo by Susan Schoenian



Figure 4. Spanish Yearling Bucks; Photo by Niki Whitley