# Goat & Sheep News

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## Contents



## Marketing Goats and Sheep

*Steven M. Jones, Associate Professor - Animal Science*

Meat products from meat goats and sheep are in increasing demand in the U.S. There is a demand for animals of all ages, weights and qualities (unlike beef, pork and poultry that have well-defined carcass and quality targets). Market price is influenced by supply and demand, dressing percentage and the carcass quality of the animal offered for sale. Neither the goat nor lamb meat trade has a use for excessively fat animals.

Most goat and lamb is sold bone-in. Packers generally sell young goats as whole carcasses, which then may be quartered for retail presentation. Fabrication specifications for retail products can vary significantly, depending on consumer group preferences.

| IMPS Style | Carcass Weight Range | Recommended Skeletal Cuts | Recommended Muscular Cuts |
|---|---|---|---|
| Platter | 15 lb or less | | |
| Roasting | 15-30 lb | | |
| Barbecue | 20-40 lb | | |
| Food Service | 30-40 lb | | |
| Hotel | 40 lb or more | | |

Institutional Meat Purchase S Specifications for goat carcasses.

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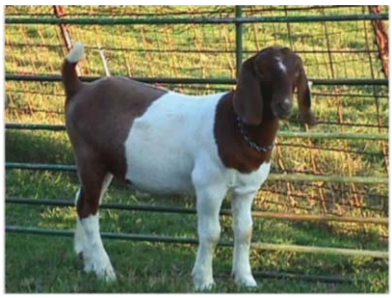
Older goats are usually processed and sold as bone-in cubes. Small lambs may be presented for retail sale similar to kid goats. Heavier lambs (>50-pound carcass) are generally fabricated into the four retail cuts (leg, loin, rack and shoulder), each of which may be further fabricated before sale.

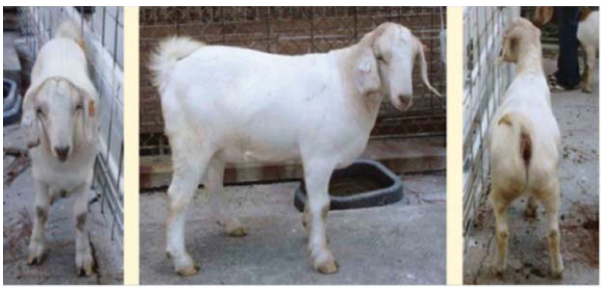
Most goats and lambs are born in the spring and come to market mid-summer to late fall. Consequently, supply often exceeds demand during late summer and early fall, and prices soften. Kid and lamb prices are historically the highest from mid-November through the Easter holidays. Holidays and religious celebrations often drive market prices higher.



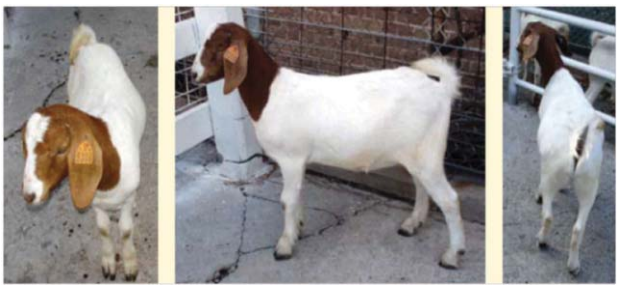
## Market Observations

- Regardless of age, healthy, well-conditioned animals top the market.
- Unhealthy, lethargic or thin animals are generally discounted.
- Sell when nobody else does. Sell when it rains (or during other inclement weather that restricts the numbers coming to a weekly auction market).
- An "optimum" live weight for young slaughter goats is 60 pounds. Goat kids weighing 46-49 pounds are difficult to sell. In this narrow weight range, goats are too heavy for the traditional cabrito market and too light for the markets on the coasts and in the Northeast. Maximum live weight for the cabrito market is 38-42 pounds.
- Castrate male goats/lambs. Wethers sell well any time of the year and will bring "top dollar all day." Although opportunities exist to sell intact male goats/lambs for a premium (to castrates), these opportunities occur infrequently and are relatively small in size (number of head required). Another justification for castrating young lambs or goats is to eliminate the possibility of ewe lambs or doe kids breeding prematurely.
- Wooled-breed lambs (fine wools, medium wools and crosses) remain in demand, both as feeders and fats.
- An "optimum" target slaughter weight for hair lambs is 60-70 pounds. Compared to the wooled breeds, the hair sheep are earlier maturing and fatten very quickly. Consequently, harvest weight for fed hair lambs (with 0.5 inches of backfat or less) will seldom exceed 100-120 pounds.
- The summer months (June through September) are generally a difficult time to sell hair lambs, and market prices are usually at their annual low.
- Know what your animals weigh so you will know what price you received, in situations where they are sold on a per-head basis.
- Consider breeding sheep and goats out-of-season. Suckling lambs and kids sold at Easter and Christmas time, when few new crop lambs/kids are available, sometimes sell for very high prices.
- When selling to local auctions, call the market manager to find out what prices are. Get to know the market managers at the auctions where you plan to take lambs/goats.
- Take pride in the lambs and kids you take to the sale barn. Sit through various sheep and goat sales to learn what the buyers want and are willing to pay a premium price for. Get to know the buyers. Find out what they think of your animals. A good reputation helps to sell livestock.

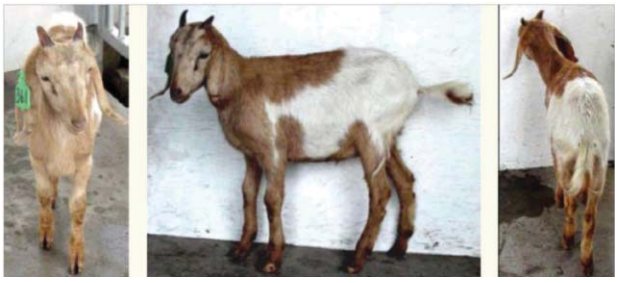
## USDA Live Goat Grades



Selection $1^{50}$



Selection $2^{50}$



Selection $3^{70}$

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Institutional Meat Purchase Specifications for Goats; USDA Ag Marketing Service Grading and Standardization.

## Co- and Multi-Species Grazing

*Steven M. Jones, Associate Professor - Animal Science*

The differences in feeding behavior among cattle, sheep and goats uniquely fit each species to the utilization of different feeds available on a farm. These differences should be considered in determining the best animal species to utilize a particular feed resource. Feeding behavior is also important in determining whether single or multi-species will best consume available plant materials. Most studies indicate greater production and better pasture utilization are achieved when sheep and cattle or sheep, cattle and goats are grazed together, as opposed to grazing only sheep, goats or cattle alone. This is especially true where a diverse plant population exists. Differences among ruminant species in forage selectivity offer potential for efficient utilization of pastures with diverse arrays of plant species.

Most studies indicate greater production and better pasture utilization are achieved when sheep and cattle or sheep, cattle and goats are grazed together, as opposed to grazing only sheep, goats or cattle alone.

Because of the complimentary grazing habits, the differential preferences and the wide variation in vegetation within most pastures, one to two goats can be grazed with every beef cow without adversely affecting the feed supply of the beef herd. The selective grazing habits of goats in combination with cattle will eventually produce pastures which are more productive, of higher quality and have few weed and brush problems.

Judicial mixed-species grazing can have additional benefits. Because gastrointestinal parasites from goats or sheep cannot survive in the stomach of cattle, and because gastrointestinal parasites from cattle cannot survive in the stomach of goats or sheep, mixed-species grazing will decrease gastrointestinal parasite loads and slow resistance of gastrointestinal parasites to conventional dewormers. Several strategies can be used to one's advantage. In fields with a low parasite load, animals can be grazed together, or animals with the highest nutritional requirements can have access to the field first, followed by the animal species having lower nutritional requirements. A variation of co-grazing with nursing animals is to have openings in the fence giving forward access of ungrazed pasture to young stock. Alternatively, in a field infected with a high load of goat or sheep parasites, cattle should be grazed first, followed by goats or sheep.

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## Understanding Anthelmintics

*Steven M. Jones, Associate Professor - Animal Science*

An anthelmintic is a substance that expels or destroys gastrointestinal worms. The more common name is dewormer or "wormer." Anthelmintics are also called parasiticides, endectocides, nematodcides, parasitics, antiparasitics and drenches.

Anthelmintics are separated into classes on the basis of similar chemical structure and mode of action. Although anthelmintics are sold under many brand names, there are only three chemical classes of dewormers.

All drugs in a chemical class kill worms in the same manner, though the effectiveness within chemical families varies. For drug rotation to be of any value, you need to switch chemical classes, not just brand name products. On the other hand, it is no longer recommended to rotate dewormers (in the traditional sense) but rather to selectively deworm sheep and goats, using specific dewormers for specific situations.

All anthelmintics essentially kill worms by either starving them to death or paralyzing them. Because worms have no means of storing energy, they must eat almost continuously to meet their metabolic needs. Any disruption in this process results in energy depletion. Interfering with feeding for 24 hours or less is

sufficient to kill most adult parasites. Parasites will also die if they become paralyzed and temporarily lose their ability to maintain their position in the gut.

## Benzimidazoles

The first chemical class of modern anthelmintics developed was the benzimidazoles (BZD). The first drug in this class, thiabendazole (TBZ), was introduced in 1961. In addition to thiabendazole (which is no longer sold), this chemical class includes fenbendazole (Safeguard®), albendazole (Valbazen®) and oxyfendazole (Synanthic®). Benzimidazoles interfere with the worm's energy metabolism on a cellular level.

They bind to a specific building block called beta tubulin and prevent its incorporation into certain cellular structures called microbutbules, which are essential for energy metabolism. Interfering with energy metabolism is a much more basic mode of activity than the other classes of dewormers. For this reason, benzimidazoles are also able to kill worm eggs. Benzimidazoles have a wide margin of safety and broad spectrum activity.


**Examples of benzimidazoles**

## Nicotinic Agonists

Nicotinic agonists comprise the next class of anthelmintics. They include imidazothiaoles (IMID) and tetrahydropyrimidines (TETR). The tetrahydropyrimidines group includes pyrantel pamoate (Strongid®), pyrantel tartrate and morantel tartrate (Rumatel®).

The tetrahydropyrimidines mimic the activity of acetylcholine, a naturally occurring neurotransmitter that initiates muscular contraction. The worm is unable to feed and quickly starves. Tetrahydropyrimidines only affect adult populations of worms. They do not have activity against the larval stages and are ineffective against cestodes (tapeworms) and trematodes (liver flukes).


**Examples of nicotinic agonists (levamisole)**

Imidazothiaoles have a similar mode of action as pyrantel and morantel, causing spastic paralysis of the worms. The group includes the drug levamisole (Prohibit®, Tramisol® and Levasol®). In addition to being used as an anthelmintic for animals, levamisole has been used to treat various human diseases: colon cancer, melanoma and head and neck cancer and influenza. It was discovered in 1966.

Compared to other anthelmintics, levamisole has the narrowest margin of safety, though toxicity is usually the result of excess dosage. Levamisole has a broad spectrum of activity and is effective against many larval stages of parasites, though not arrested larvae. It is currently off the market.

## Macrolytic Lactones

The last chemical class to be introduced was the macrolytic lactones (MLs, macrolides). The first drug, ivermectin. was introduced in the early 1980s by Merck. It was the first drug to kill migrating larval stages of worms, as well as the adults. Ivermectin quickly dominated the market, leading to its overuse.

Macrolytic lactones consist of two closely related chemical groups: avermectins and milbemycins. The avermectins include ivermectin (Ivomec®) and derivatives: doramectin (Dectomax®) and eprinomectin (Eprinex®). Moxidectin (Cydectin®, Quest®) is the only milbemycin.

All of the macrolytic lactone compounds have the same mode of action. They are developed from the same genus of soil-dwelling organisms (genus Streptomyces). They interfere with GABA-mediated neurotransmission, causing paralysis and death of the parasite. Macrolytic lactones are the most potent killer of worms and are more persistent in their effect. The duration of persistant activity varies according to the drug and formulation.

Macrolytic lactones also have the unique quality of killing several external parasites such as lice, mites and ticks. They have a wide margin of safety for livestock and are effective against all stages of worms, including inactive forms. However, MLs are ineffective against cestodes (tapeworms) and trematodes (liver flukes).

Ivermectin is also used as a broad-spectrum antiparasitic agent in humans. It is mainly used for the treatment of river blindness. Ivermectin is the primary ingredient used in several types of heartworm preventatives. Collies and



**Examples of macrolytic lactones**

related breeds may be sensitive to ivermectin, though ivermectin-based heartworm preventatives deliver doses of ivermectin which are suitable for dogs with this sensitivity.

Moxidectin was introduced in 1997. It is the most potent of the ML group and able to kill some worms resistant to ivermectin. Moxidectin works like Ivermectin, but disrupts a different neurological chemical. Moxidectin is effective in the prevention of heartworm disease in dogs and cats.

Because moxidectin is so closely related to ivermectin, its overuse (and misuse) is expected to lead rapidly to resistance. As such, many experts recommend moxidectin only be used for clinically parasitized animals.

**Table 1. Classes of Anthelmintics and Trade Names**

| Class | Drugs | Common Names |
|---|---|---|
| Benzimidazoles | Thiabendazole<br>Fenbendazole<br>Albendazole<br>Oxfendazole | TBZ®1<br>Panacur®,<br>Safeguard®2<br>Valbazen®1<br>Synanthic® |
| Nicotinic Agonists<br>Imidazothiaoles<br>Tetrahydropyrimidines | Levamisole<br><br>Morantel<br>Pyrantel | Prohibit®1,<br>Levasol1,<br>Tramisol®1<br><br>Rumatel®2,<br>Nematel®<br>Strongid® |
| Macrolytic Lactones<br>Avermectins<br>Milbemycins | Levamisole<br><br>Morantel<br>Pyrantel | Ivomec®1,<br>Primectin™1<br>Eprinex®<br>Dectomax®<br><br>Cydectin®1,<br>Quest® |

## Anthelmintic Resistance

Anthelmintic resistance was inevitable. It is a worldwide problem, having reached catastrophic proportions in some regions. Each time an anthelmintic is administered to an animal, it eliminates parasites whose genotype renders them susceptible and selects for parasites who are resistant and pass their resistant genes onto the next generation of worms.

Certain practices accelerate the rate by which the worms become resistant to the anthelmintic(s). These include frequent deworming, treating every animal in the flock, putting treated animals immediately onto a clean pasture, underdosing the drug, injecting the drug and pouring the drug on the animal's back. Frequent treatments are primary cause of resistance.

Understanding how anthelmintics work may help to devise strategies for slowing down the rate by which the worms develop resistance. At the same time, producers need to limit their use of anthelmintics in order to prolong their effectiveness for as long as possible.

## Strategic Deworming

For effective internal parasite control, use a combination of animal and pasture management and strategic dewormings. Treating goats too often for internal parasites, with little regard for environmental and pasture conditions and health, is costly and may lead to a false sense of security and dead animals. Also, frequent exposure to antiparasitic (anthelmintic) drugs causes stomach worms to become drug resistant. Fecal egg counts can help you determine when to treat. Some veterinarians and animal health diagnostic labs can perform fecal egg counts.

Another line of defense against stomach worms is the use of the FAMACHA field examination. Note that FAMACHA only works for anemia-producing infections, and the primary anemia producer is *Haemonchus contortus*. FAMACHA provides the producer with a method of visually observing signs of anemia. An oversimplified explanation of FAMACHA is that the producer examines the inner lower eye membrane (not the mouth's gums) for coloration. Red to bright pink membranes indicate a very low worm load, pink to light pink reflects the need to do further testing and deworming, and white means anemia exists and the goat needs immediate medical attention.

**The white bleaching appearance of membrane indicates severe anemia.**

Do not rotate dewormers. Use one dewormer until it quits working, then change to another family of dewormers. Keep the animals in the same pen/pasture for up to 48 hours because they will be sloughing worms in their feces – then move them to a fresh clean pen/pasture. However, under many circumstances, freshly dewormed goat/sheep that were heavily infested with worms should not be moved to new pasture, because whatever worms they have retained are resistant to the dewormer that was used, resulting in contaminating the fresh pasture with resistant worms. The producer obviously does not want a clean pasture full of resistant worms.

## Calendar of Events

**June 24:** Arkansas Goat Producers' Meeting, Petit Jean State Park, Pavilion B, 8 a.m to 10 p.m. People can come when they want and stay late if they want. There will be a potluck with hot dogs at 2 p.m. and a business meeting at 3 p.m. There is a kids' playground and a lake, and shade.

**July 15:** North Arkansas Meat Goat Association Meeting, 2 p.m., Farm Bureau Building, 110 Industrial Park Road, Harrison, Arkansas, http://www.arkansasmeatgoat.com.

**July 27 – August 4:** Ozark Empire Fair, 3001 North Grant, Springfield, Missouri. Show dates and judges TBA, http://www.ozarkempirefair.com.

**August 7:** Forage Management Workshop, "Improving Utilization of Existing Forages," Quitman High School. Hosted by Arkansas Cooperative Extension Service. Contact Steve Jones, 501-671-2067, sjones@uaex.edu.

**August 9-19:** Missouri State Fair, Missouri State Fair Grounds, 2503 West 16th Street, Sedalia, Missouri. Show dates and judges TBA, http://www.mostatefair.com.

**September 8:** Artificial Insemination Demonstration, Langston University; http://www.luresext.edu/goats/extension/AIregLU09082012.pdf.

**September 8-9:** Southwest Missouri Boer Goat Classic, Vernon County Fair Grounds, 500 North Centennial Blvd., Nevada, Missouri. Shows at 10 a.m. and 3p.m. on Saturday and 9 a.m. on Sunday. Entry fee $10 by August 29, pen fee $5. Judges TBA. Contact person Marla Sneed, (417) 448-9615, showgoats@sofnet.com.

**September 8-9:** Southeast Missouri Showdown, Arena Park, Cape Gerado, Missouri. ABGA-sanctioned open shows, ABGA Judges TBA. Contact (573) 334-9250, http://www.semofair.com.

**September 21-22:** Northwest Arkansas District Fair, Northwest Arkansas District Fair Grounds, 1400 Fair Grounds Road, Harrison, Arkansas 72601, Junior Market Meat Goats and Junior Boer Goats. Contact person Robert McMahen, (870) 557-1759, robert@northarkboers.com, http://www.northarkboers.com.

**September 21-22:** Northwest Arkansas District Fair, Junior Market Meat Goats and Junior Boer Goats. Contact person Robert McMahen, (870) 557-1759, robert@northarkboers.com, http://www.northarkboers.com.

**September 23-24:** North Arkansas Meat Goat Association Fall Classic, Northwest Arkansas District Fair Grounds, 1400 Fair Grounds Road, Harrison, Arkansas 72601. Two ABGA-sanctioned open shows on Saturday, one on Sunday. Early entry fee, $15, early entry deadline, September 17; late entry fee, $20. Check-in time 3 to 7 p.m., September 23. ABGA judges TBA. Contact person Robert McMahen, (870) 557-1759, robert@northarkboers.com, http://www.northarkboers.com.

**October 12-13:** Arkansas State Fair, 2600 Howard Street, Little Rock, Arkansas 72206. Two ABGA-sanctioned open Boer goat shows at 9 a.m. on Friday and 9 a.m. on Saturday; one junior Boer goat show on Saturday after open show. ABGA judges TBA. Contact persons Scott and Jennifer Hawthorn, (870) 246-6353, jendh34@yahoo.com, http://www.arkansasstatefair.com.

**October 14-15:** Arkansas State Fair, 2600 Howard Street, Little Rock, Arkansas 72206. Junior Market Goat Show; http://www.arkansasstatefair.com.

**October 20:** North Arkansas Meat Goat Association Meeting and pasture walk at a member's farm. Starts at 9:30 a.m.

**October 20:** Training Clinic: Artificial Insemination for Goats, Antlers, Oklahoma, (580) 286-2574, Ext, 2 (Idabel) – Carl Henderson or (405) 466-6126 (Langston) – Terry Gipson

**November 8:** Goat Field Day, Tin Can Hill Ranch near Damascus (a.m.); and Cannon Ranch (p.m.) in Drasco.

Steven M. Jones

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