Goat & Sheep News

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Contents

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Evaluating Alternative Feeds and Forages for Sheep and Goats

Steven M. Jones, Associate Professor - Animal Science

The year 2011 was challenging for sheep and goat producers in regards to feed costs, forage production and hay availability. Many regions of the state experienced significant drought, while other regions are too dry to have normal hay quantities.

I received questions on by-product feeds and alternative forages that can be utilized by sheep and goats. Some producers were trying to economize on the feed bill, and some were simply trying to find adequate quantities of forage. There are many misconceptions about by-product and alternative feedstuffs. My general "rule of thumb" is to research any products you are considering purchasing. A complete analysis of nutrient value (energy, protein, vitamins and minerals) should be acquired. This analysis should be from a feed sample analysis, but "book value" can serve as a start for researching the product.

Generally speaking, the cost of the product is tied to the nutritional value. There are cheaper feeds for purchase, but there very few CHEAP feeds. Sheep and goats are ruminants; therefore, they are able to use a variety of feedstuffs to a certain extent. When considering an alternative feedstuff, it is imperative to get an analysis. Most nutritional or chemical analysis of a feed or forage will list items individually. In this article, these items will be grouped by the nutrient or contribution to the diet.

Energy – Energy content of a feedstuff is reflected by the values contained in lab reports from the item's total digestible nutrients (TDN), digestible energy (DE), metabolizable energy (ME) and net energy (NE). Net energy can also be further reported as net energy-maintenance, net energy-gain or net energy-lactation (dairy producers' use). The TDN is reported as a percentage and is used most by producers. The other values (DE, NE, etc.) are actually a calorie value per unit of measure.

Feeds high in energy content usually have certain characteristics. They are lower in fiber content, have a high starch level, a high fat content or some combination of the three. For instance, corn grain is low in fiber and high in starch. Dried distillers grains (a by-product of corn used in ethanol production) is actually higher in energy

than corn, even though it has three times the fiber and very little starch. This is because it has high fat levels (9 to 12 percent).

High-energy feeds are often used in sheep and goat rations. However, care must be taken when feeding high-energy feeds. High starch-containing feeds can cause lactic acidosis. Thus, feeds high in digestible starch should be introduced to ruminants slowly and over a period of time. It is usually recommended that fat levels of ruminant diets not exceed 6 to 8 percent of the diet dry matter. So, feeds high in energy from fat can often only be used as a portion of the energy feed of a ration.

Fiber Content – The fiber content of feedstuff is reflected on a feed analysis report by the variables titled NDF, ADF and lignin. The NDF stands for neutral detergent fiber and represents the fiber fraction containing hemicellulose, cellulose and lignin. The ADF stands for acid detergent fiber and represents the cellulose and lignin content.

These values are reported on a percentage basis. The NDF value is important because it contains the entire fiber content and relates to how much of the feed an animal can physically consume. As NDF percentages increase, dry matter intake will generally decrease. The ADF value is used as a predictor of how much of the feed is actually digested. As ADF increases, digestibility of forages usually decreases.

The book values for high-quality alfalfa hay have an NDF content of 45 percent and an ADF of 35 percent. This is compared to an NDF of 87 percent and an ADF of 68 percent for low-quality filler forage such as cottonseed hulls.

Protein – Protein content of a feed analysis report is fairly straightforward. It is reported as a percentage. With by-product or alternative feeds or forages, it is also a good idea to check on the level of heat-damaged protein. This is often reflected as unavailable protein, ADF-N, bound protein or insoluble protein. The higher the number, the less digestible the amount of crude protein is contained in the sample being analyzed and the more heat damage that has occurred.

Minerals and Vitamins – These are usually listed individually. All of them are important, but of particular importance are the amounts of calcium, phosphorus, copper and sulfur. Most feeds from this region of the country should also be automatically considered deficient in selenium.

Many by-product and alternative feeds are low in calcium and are often high in phosphorous. This doesn't preclude their use in a ration, but it does mean extra calcium will need to be added. The ratio of calcium to phosphorous for male sheep and goats should be at least 2:1 to help prevent urinary calculi.

Copper is important to note to avoid copper toxicity in sheep. Levels exceeding 15 ppm should catch your attention.

Sulfur is also high in many of the corn by-products from either ethanol or sugar production. Sulfur can interfere with thiamine (Vitamin B_1) absorption, leading to the disease polioencephalitis. If high levels of these by-products are used, then thiamine should be included in the ration.

Forage Tips for Fall Pasture

John Jennings, Professor - Forages

The summer heat wave and dry conditions have reduced the hay crop to well below normal, and pastures are drying up quickly all across the state. Producers have several options to make a fall forage crop if conditions improve. Making decisions for fall pasture should begin now to have as much chance as possible for fall grazing. Here are some tips for planning fall grazing options.

Stockpiled Bermudagrass (also bahiagrass and dallisgrass) – Warm-season grasses can be stockpiled for fall and early winter grazing. This is a very reliable practice and should be a part of all pasture programs that are dominant warm-season grass forage. The field should be clipped or grazed by early to mid-August then fertilized with 50 to 60 pounds/acre of nitrogen by mid-August in north Arkansas and by late August to the first week of September in south Arkansas. The forage should be allowed to grow until late October to early November, much like a fall hay crop, but it should be strip-grazed instead of harvested. Each bale of hay costs about $25 to produce, so letting the livestock harvest the standing forage is much cheaper. On the flip side, if a field situation does not allow grazing (rented land, no fence or water, etc.) there is still time to make a fall hay cutting using the same management as for stockpiled bermudagrass. Forage quality of late summer bermudagrass is very good. Typical yields range from 2,000 to 4,000 pounds/acre.

Stockpiled Fescue – Stockpiled fescue makes good grazing from December through February. This is a very reliable practice and should be a part of all pasture programs that are dominant cool-season grass forage. We stockpile fescue every year for the 300 Days Grazing Project at the Livestock and Forestry Branch Station near Batesville, and it even worked well last year in an extremely dry fall season. Clip or graze the field by early September and fertilize with 50 to 60 pounds/acre of nitrogen the first week of September in north Arkansas and by late September in south Arkansas. Fescue will grow as long as the temperatures are above 40°F, so grazing can be deferred until December. Forage quality of fall growth is very good. Typical yields range from 2,000 to 3,000 pounds/acre.

Winter Annuals – Wheat, rye, winter oats and ryegrass are all good options for fall and winter pasture. If fall forage is needed, planting on a tilled seedbed will probably be necessary. Sod-seeded winter annuals planted into bermudagrass usually do not produce much forage until late winter. At the Livestock and Forestry Branch Station near Batesville, wheat is planted every year on a tilled seedbed for pasture during Labor Day week and is usually ready to graze by early to mid-November. Fertilize according to soil test recommendations for winter annual pasture. Winter annuals can also be sod-seeded in October in fields after livestock is moved to stockpiled bermudagrass pasture. These later-planted winter annual pastures will be ready to graze in February or March. A key point this year will be to find and secure a seed source early. The drought in Texas and Oklahoma will likely result in producers in those states planting a tremendous acreage of winter annuals to make up for the short hay crop. That could put pressure on the seed supply.

Making decisions for fall pasture should begin now to have as much chance as possible for fall grazing.

Forage Brassica – Turnips, radishes and rape are all fall crops that can produce good forage before cold weather. In one demonstration last fall, forage turnips planted on tilled soil on September 4 produced 1,850 pounds dry matter per acre by October 22. The seeding rate for turnips is 5 pounds/acre. Turnips can be planted with wheat or ryegrass to add more forage. We have tried planting turnips using different methods over the past couple of years and have found that some methods that work well for planting small grains and ryegrass do not work for turnips. In our experience, broadcasting seed in short grass sod and covering with a tire drag does not work well, and planting in October is too late. Turnips and other forage brassicas are best planted by early September on a tilled seedbed. Do not plant the seed too deep. Roll or cultipack the seedbed, broadcast the seed and lightly roll or cultipack to cover the seed. A harrow or field cultivator will likely cover the seed too deep. Fertility management is very similar to that for wheat or ryegrass – about 50 to 60 pounds per acre of N and apply P and K according to soil test for winter annual pasture. Turnip leaves do not contain a lot of fiber. It is best to plant turnips in combination with small grains or ryegrass or limit-graze them to reduce digestive problems in animals that consume too much.

Strip-Grazing or Limit Grazing – Withering pastures will force early hay feeding without rain soon. Look at the amount of forage standing in the fields, and estimate how long each field can be grazed by the herd. Close the gates, and graze each pasture similar to feeding hay. Be sure to keep livestock off previously grazed pastures to protect any regrowth. A single-strand electric polywire works very well for limit grazing or strip-grazing pastures. Strip-grazing works well on stockpiled forages and winter annual forages. Demonstration results show that strip-grazing results in twice as many grazing days per acre as continuous grazing the entire pasture. That can save a lot of hay feeding and stretch a short forage supply.

Fertilizer Application for Fall Forages – It is difficult to convince producers to apply fertilizer to dry soil during late summer heat to produce a fall forage crop. We have observed over 13 years of stockpiled forage demonstrations that if fertilizer or poultry litter is not applied, fall forage growth is poor. In some cases where a hay field was well-fertilized in summer, good fall stockpiled bermudagrass growth occurred in fall with no additional fertilizer. Very few stockpiled forage demonstrations were conducted where fertilizer application did not save money compared to the cost of hay. Remember, ammonium nitrate, ammonium sulfate and calcium nitrate fertilizers do not volatilize. Urea can volatilize from the soil surface. Arkansas research trials have shown a range of 0 to 29 percent lower yield of bermudagrass from urea than from ammonium nitrate. Research has shown that Agrotain significantly reduces N volatilization from urea, but the addition of Agrotain to urea did not significantly improve stockpiled fescue yield in four Missouri trials or bermudagrass yield in five Arkansas trials. A significant response to Agrotain was found in one 2007 Arkansas bermudagrass trial. The reason for the low forage yield response to Agrotain in these trials is not known. If urea is significantly cheaper than ammonium nitrate per unit of N, it may still be more economical to apply it at a slightly higher rate. Applications made shortly before rainfall have greatly reduced losses from volatilization.

Principles of On-Farm Performance Testing

Steven M. Jones, Associate Professor - Animal Science

The easiest way to start keeping and utilizing performance data is to conduct an on-farm performance test. This is a practice where you, the producer, keep records on your animals and utilize this information for selection and marketing of your herd. This information includes growth from birth through weaning as a minimum and should include post-weaning growth data on all animals maintained after weaning. The records need to include both a sire and dam ID to allow culling of breeding stock that does not perform up to your standards.

The data needed for an on-farm performance test include kid, dam and sire ID; kid birth date; birth type; sex; age of dam; birth weight; rearing type; weaning date; weaning weight. This basic information will allow for calculation of adjusted birth and weaning weights. These weights can then be used to compare animals within a contemporary group, a group of animals in the same herd with similar management system and generally within 60 days of age between each other. This information can also be used to evaluate the sires and dams to allow for selection of better producers and improve the overall herd.

The data needed for an on-farm performance test include kid, dam and sire ID; kid birth date; birth type; sex; age of dam; birth weight; rearing type; weaning date; weaning weight.

Some basic calculations will be necessary to adjust for the different known factors affecting birth and weaning weights. These calculations rely on adjustment factors that are available from the Sheep Improvement Program and were calculated using Boer data submitted to the ABGA's BEGIN program. Others will be available as more data is collected.

The data is often used to calculate performance ratios to allow for easy comparisons between animals. These ratios are calculated by dividing the animal's adjusted weight by the average weight of the contemporary group and multiplying by 100. Because of the way it is calculated, a ratio of 100 indicates the animal was average. If above 100, then it was above average; if below 100, then below average. It makes it easy to make quick evaluations and establish culling levels.

It is very important to remember that performance testing should only be used to evaluate individuals within the contemporary group. Comparisons across contemporary groups or farms are not accurate because of differences in environment and management. However, it is very good for evaluating individuals within the group.

Selection Traits

A number of traits can be utilized by producers to select their breeding stock. These include breed type information (horns, color, body type, etc.), birth type, birth weight, weaning weight, yearling weight, milk production, mothering ability and many others.

The key to success is to concentrate on one or a few traits that have the greatest economic impact. In most cases, these are traits related to growth and include birth, weaning and yearling weight. Another important trait to consider is twinning rate or type of birth. It has been proven that kids born twin are more likely to produce twins than those born single. This is also important in sires because their daughters may be utilized in the herd. Also, does that mean multiple kids wean more total weight than those with singles, even if the individual kids born and raised single are heavier than those born and raised twin.

Each producer will need to determine which trait or traits to focus for his or her herd. This should be done in association with the goals for your herd and the demands of your customers. However, some basic knowledge of economic value of different traits is also important.

Research has shown that reproduction is the most economically important trait. Weight gain or performance is the second most important trait. In general, goat producers don't see enough premiums in price to be concerned directly with carcass traits. Health traits are also very important in goat production. It is very difficult to know where these relate to economic importance, but producers should strive to select animals that require minimal treatment for parasites and foot scald/rot.

Conclusions

Goat producers can improve production and health of their animals through selection. To do this, producers need to start keeping and utilizing performance records. Fertility is the most important economical trait generally followed by growth. For goats also consider

health traits, especially resistance to parasites. The use of multi-trait selection is important, but producers should not consider too many traits at once. Independent culling level is the most practical way to select for multiple traits at one time without expected progeny differences being available. Comparisons between animals should be done under similar production practices to reduce differences between environments.

For information on on-farm production records, contact your local county extension agent or Steve Jones: sjones@uaex.edu or 501-671-2067.

Calendar of Events

September 10 – Goat and Sheep Producers' Buying Station, 9:30 a.m. to 2:30 p.m., Duckett Farms, 146 Hwy 174N, Hope, Arkansas 71801. For more information, contact Jesse Duckett (870-777-4751, jduckett@arkansas.net, www.duckettfarms.com).

September 10-11 – Southwest Missouri Boer Goat Classic, Vernon County Fairgrounds, 500 North Centennial Blvd., Nevada, Missouri 64772. Shows at 10 a.m. and 3 p.m. on Saturday and 9 a.m. on Sunday. Entry fee $10 by August 31. Judges TBA. Contact person: Marla Sneed, 417-448-9615, showgoats@sofnet.com

September 22-23 – Northwest Arkansas District Fair, Northwest Arkansas District Fairgrounds, 1400 Fairgrounds 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 24-25 – North Arkansas Meat Goat Association Fall Classic, Northwest Arkansas District Fairgrounds, 1400 Fairgrounds 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 8 – Sheep and Goat Field Day, South Logan County Fairgrounds, Booneville, Arkansas 72927. For more information, contact Steve Jones (501-671-2067; sjones@uaex.edu) or Joan Burke (479-675-3834 ext 325; joan.burke@ars.usda.gov).

October 8 – Goat and Sheep Producers' Buying Station, 9:30 a.m. to 2:30 p.m., Duckett Farms, 146 Hwy 174N, Hope, Arkansas 71801. For more information, contact Jesse Duckett (870-777-4751, jduckett@arkansas.net, www.duckettfarms.com).

October 14-22 – Arkansas State Fair, 2600 Howard Street, Little Rock, Arkansas 72206. Two ABGA-Sanctioned Open Boer Goat Shows, one Junior Boer Goat Show and one Junior Market Meat Goat Show. Show times and judges TBA. Contact persons: Scott and Jennifer Hawthorn, 870-246-6353, jendh34@yahoo.com, http://www.arkansasstatefair.com

October 16 – North Arkansas Meat Goat Association Meeting, 2 p.m., Farm Bureau Building, 110 Industrial Park Road, Harrison, Arkansas 72601. http://www.arkansasmeatgoat.com

November 5 – Northeast Arkansas Boer Blowout, Greene County Fairgrounds, Highway 49B, Paragould, Arkansas 72450. Three ABGA shows, entry fee $20 per show or $50 for all three shows by October 30, late entry $25, pen fee $5. Judge for Show 1: Mark Berry, Show 2: Anita Messer and Show 3: Larry Epting. Contact person: Lesia Simpson, 870-634-6028, lisia@littlelisiasboers.com, http:www.arkansasboergoats.com

November 5 – Market Goat and Sheep Sale, 9 a.m. to noon, Silver Hill Farm, 790 Goat Drive, St. Joe, Arkansas 72675, 870-439-2081.

November 12 – Goat and Sheep Producers' Buying Station, 9:30 a.m. to 2:30 p.m., Duckett Farms, 146 Hwy 174N, Hope, Arkansas 71801. For more information contact Jesse Duckett (870-777-4751, jduckett@arkansas.net, www.duckettfarms.com).

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