Rabies in Horses
Mark Russell, Assistant Professor

So far this year in Arkansas (as of March 1), there have been 23 reported cases of rabies in animals. Twenty-one of these cases have been in skunks, while one has been in a cow and one reported case in a dog. Though it is unlikely your horse will become stricken with rabies during its lifetime, as owners we should always be cognizant of the signs of not only our horses having rabies but also other animals that could come in contact with the horses. Further, rabies is especially dangerous, given the fact that rabies can be easily spread to humans.

How does a horse get rabies?
- In nearly every case of rabies, it is spread from one animal to another in a bite.
- Horses are curious animals who will often walk up to another animal that is acting bizarrely and get bitten on the nose or somewhere on the face.

What does a horse with rabies look like?
- Surprisingly, horses that come in contact with rabies will not show signs until 2-6 weeks after exposure. In more rare cases, a horse may not show signs for up to one year.
- Signs include:
  ➢ Change in behavior
  ➢ Dull
  ➢ Aggressive
  ➢ Ataxia
  ➢ Head pressing and/or circling
  ➢ Difficulty swallowing
  ➢ Muscle tremors or convulsing

Treatment
- There is currently no treatment available.
- Most horses die within 2-4 days after contracting rabies if not euthanized.
- If a horse has been exposed to an animal with rabies and its vaccination is more than 30 days old, revaccinate it and hold in quarantine for 45 days. If there was no previous vaccination, it is recommended the horse be held in quarantine for 6 months.

Prevention
- Vaccination is the best prevention for your horse. It is also recommended that dogs and any barn cats that may come in contact with your horse be vaccinated as well. It should also be noted that just because a horse has received a vaccination for rabies does not guarantee the horse will not get it.
- Foals and weanlings less than 12 months of age are administered an initial series of three vaccines (the timing is dependent on the vaccination status of the mare). Thereafter, horses are vaccinated annually (even if the vaccine is labeled as a three-year product).

Sources: AAEP, Dr. Stacey Oke, TheHorse.com, Colorado State University Extension and University of Kentucky Animal Science Department.
Incorporating Native Warm-Season Grasses
Into Arkansas Beef Production Systems
Paul Beck, Professor

The native warm-season grasses switchgrass, indiangrass, eastern gamagrass, big bluestem and little bluestem have been discussed prominently over the last couple of years as drought has gripped our state and surrounding areas. These grasses are purported to be drought proof, require little in terms of soil fertility and provide benefits to wildlife, especially ground-nesting birds such as bobwhite quail. The species mentioned are what we call tall grass prairie species and were the dominant grasses in the eastern prairies of the Midwest and the plains of eastern Oklahoma and Kansas but are now only commonly found in the northeastern Oklahoma Osage Prairie and southeastern Kansas Flint Hills. Tall grass prairie species were also commonly found in the southeastern United States in a mosaic of hardwood forests and tall grass prairie meadows.

There is no doubt that the bunch grass growth habit of these forages is highly beneficial to wildlife, if grazing is managed so nesting periods are not disturbed by livestock, and in the native range extensive management in Oklahoma and Kansas, these grasses are productive with no fertilizer. But, very little of the tall grass prairie species can be found in our state. So, what happened to these highly adapted grasses that developed naturally in our environment? These tall grass prairie species are considered “ice cream plants” or decreasers by range scientists, meaning that they are the preferred forage species to grazing livestock, and under intensive grazing with repeated defoliation, they are among the first to decrease by overgrazing and disappear from native range pastures. Over years of overgrazing and encroachment by brush species (through exclusion of grass fires, lack of herbicide use, etc.), these species disappeared from our pastures and were replaced by introduced forage species like tall fescue and bermudagrass.

Recent research indicates that with limited fertilizer (50 to 60 pounds of actual N per acre) the tall grass prairie species are extremely productive; switchgrass, for instance, has been shown to produce up to 7 tons of forage DM per acre. Productivity during drought situations is not to this level but, if properly managed, will produce forage. But if these grasses were “drought proof,” forage production issues would not have occurred in Kansas and Oklahoma in the last three years of marginal rainfall. Of more concern, if these native species are grazed hard and repeatedly defoliated during drought stress (or at any time), plant vigor will be decreased and stands will thin and eventually disappear. One interesting note, in southwestern Africa, where bermudagrass is native, the native pastures in that area were overgrazed and repeatedly defoliated, and bermudagrass (an increaser species in that area) would then dominate. Once bermudagrass was the dominant forage species, pastures were then fertilized and managed for bermudagrass production.

Performance of growing steers can be excellent (ADG > 2 lb/day) when grazing native grasses in the early summer. But, after mid-summer, native grasses begin to develop seedheads and enter reproductive stages of growth; forage quality at this point is very low and livestock performance is limited unless supplements are provided.

Native warm-season grass species have many positive attributes and can be a valuable addition to forage programs for livestock production. There are limitations to their use, however. If native grasses are established and grazing management remains status quo with no control to grazing and plants are repeatedly grazed with no rest or deferment, then stands will disappear as they historically have been shown to do.

Construction of a Tire Drag to Aid Forage Establishment
Kenny Simon, Program Associate, and
John Jennings, Professor

Broadcast seeding is a popular forage planting method, but adequate seed-to-soil contact in pasture sod can be problematic. This can be remedied by scarifying the sod with a harrow or field drag. Many producers either do not have a drag, the drag is not easily transported or the drag is too heavy or aggressive for covering small-seeded forages. Homemade tire drags work well to scarify short sod, expose soil and improve stand establishment.

Tire drags have many advantages. They make use of salvaged tires, they are inexpensive, and the tires flex over or around rocks, stumps, trees, etc. Our tire drag is constructed with salvaged 10- to 14-ply road grader tires; however, the drag can be sized to match the tractor or ATV to be used to pull the drag.
The tires are cut in half vertically down the middle of the tread to make a “cut side” and a “slick side.” This makes the drag more versatile for variable field conditions. The “cut” side is more aggressive for heavy sod conditions and the “smooth” side can be used to smooth and firm tilled seedbeds or in thin sod pastures.

A heavy ply rating is needed so the cut tires hold shape and do not fold up when in use. The cut tires are laid out in a six-tire pyramid formation with one tire in the front, two tires in the middle and three tires on the end. The drag width using road grader tires in this formation is approximately 13 feet. Only use bias-ply tires. Steel-belted tires should be avoided because sharp wires protrude and can cause injury.

Drill a ½” hole through the tire tread and insert an eye bolt, leaving the “eye” on the outside of the tire. A thin piece of metal, approximately 2” x 4”, is used on the inside of the tire as a washer to prevent the eye bolt from pulling through the tire.

Snap-ring connectors allow the drag to be assembled or disassembled as needed.

Large snap-rings are used to connect the tires. Snap-ring connectors allow each tire to flex independently and follow the ground contour. Snap-rings also allow the drag to be assembled or disassembled as needed. A piece of pipe, used for a pull bar, is then placed horizontally between the tires and the machine that will pull the drag. Chains are welded to the pull bar, and snap-rings are used to connect the chains to the eye bolts of the tires. The first and second rows of tires are attached to the pull bar to keep the drag in line when turning. Chains are welded to the front side of the pull bar for connecting the drag to the tractor or ATV. A portable tire drag is a durable, economical and effective tool for preparing pasture sod for broadcast seeding small-seeded forages.

Drag can be disassembled for transport or storage.
An article in a recent agriculture magazine had a quote claiming that native warm-season grass pastures are drought proof, and producers are excited at that possibility. Native warm-season grasses (for forage) in this case are defined as switchgrass, big bluestem, little bluestem and indiangrass.

Drought proof and drought tolerant are not the same thing. Many warm-season forages are drought tolerant. No forage is drought proof. Drought tolerance implies that a forage can tolerate effects of drought and survive. It doesn’t mean that the grass will thrive during drought. All forages need water and an optimum temperature range to grow well. Drought proof means the grass suffers no ill effect of drought and keeps on growing as if weather conditions were normal. Native grasses can be part of a forage program and can be cost effective, BUT they must be managed differently and they are NOT drought proof.

The University of Tennessee has done work recently with native warm-season grasses through their biofuels program. Dr. Gary Bates leads the forage management effort. Gary provided several points at the recent Forage and Legume Management Conference in Harrison. (To see the presentation, go to http://vimeo.com/61109401). He pointed out that native grasses require less fertilizer for good hay yield than bermudagrass. Hay quality is moderate and can be very poor if allowed to get mature before harvest. Yield can be 4-6 tons per acre with fertilization and proper harvest. Under grazing, these grasses can be stocked at a high rate during the first 6 weeks of the growing season, but the stocking rate must be reduced later in summer to avoid stand damage. Stocker calf gains can be quite good, exceeding 2 lbs/hd/day, under good management.

Two big factors that must be accounted for in managing these grasses is that they should never be cut or grazed shorter that 8-12" and the grazing or hay season is about 100 days at most. Native grasses should not be harvested or grazed past mid-August at all. Any late-season growth must be left to allow the plants to store root reserves for winter. Grazing too late, grazing during winter and grazing too early in spring will damage stands. Winter annuals like wheat or ryegrass should not be overseeded into native grasses or the competition and grazing can damage stands. Under hay management, these grasses should not be cut more than twice a year. To avoid weakening stands, hay should only be cut once the year following a two-harvest year.

Establishment is slow and requires patience. Native grasses are notorious for poor seedling vigor. Very little topgrowth is produced the seeding year. Most growth is directed toward root growth. That means weed control is critical during the seeding year. With good weed control, native grass yield the second year will be about half to two-thirds of a fully established stand with top yields not occurring until the third year after planting.

Herbicide options are available but differ for the different species. Seeding rates are generally 5-6 pounds of Pure Live Seed (PLS) per acre as pure stands. This rate can be adjusted in mixtures so the total seeding rate of mixtures is 10 pounds PLS/acre. The PLS of many natives may only be 30 percent, so it may take 3 pounds bulk seed to get 1 pound PLS.

Switchgrass is usually planted alone because it can dominate in mixtures. Big bluestem is a good choice for hay or grazing and has good wildlife benefit under deferred forage harvest management. Big bluestem and indiangrass mixtures are commonly recommended, although big bluestem alone is easier to manage and maintain stands. Natives are promoted heavily for their benefit to wildlife, especially quail and rabbits. However, optimizing forage production from native grasses will not optimize wildlife habitat. Hay harvest or grazing must be deferred until forage is poor quality to protect the major quail nesting period of mid-summer.

These grasses can be effective additions to a forage program but in no way are replacements for all other forages. Planting these grasses without realistic expectations will lead to disappointment and stand failures. Native grasses have been around since before settlers. Overgrazing took them out before. Good management must be part of a program to make them work now.

**Native grasses can be part of a forage program and can be cost effective. BUT they must be managed differently and they are NOT drought proof.**

**Cost of Feed, Average Daily Gain and Days on Feed for Stockers and Backgrounders**

Shane Gadberry, Associate Professor, and Paul Beck, Professor

Beef cattle production in Arkansas, like other states in the Southeast, is predominately recognized as cow-calf. Yet, many calves remain in Arkansas or calves originating from other southeastern states are assembled in Arkansas for post-weaning development before placement in a finishing yard. This growing phase for fall-weaned calves usually fits one of three scenarios: developed on overseeded pasture with 1-1.5 percent body weight delivered feed, developed on hay and 1-1.5 percent body weight delivered feed or grown on annuals used for cover crops in crop management. Despite the vast amount of farm land, the last scenario is rare, and with early field preparation of acreage planted to grains, some consider the number of grazing days not practical.

The two primary scenarios involve at least 1 percent of the calf’s diet being consumed in a trough. Coupled with drought
the past two years, the portion of the diet that is typically pasture or grass hay has been substituted with crop residues and gin trash. With corn futures lingering between $6 and $8, the emphasis has been to keep the cost per ton of feed as cheap as possible. However, there are tradeoffs between the cost of the diet, calf performance and target market weights. Therefore, understanding the difference between cost of feed and cost of gain is necessary to maintain profitability in this segment of the beef industry.

Value of Gain

The graph below shows a current trend for sale price (left axis – red line) and gross income (right axis – blue line). The demand for heavy calves has been strong, improving the value of gain on grass. But, those that don’t have pasture are trying to capture the value in additional weight with roughage (hay, baled crop residue, gin trash) and byproduct feeds.

Cost of Feed

Cost of feed per ton is managed by adjusting the ratio of low-cost feed ingredients to high-cost feed ingredients. The following table demonstrates this point where a 70 percent roughage diet will cost $153/ton and a 30 percent roughage diet, $227/ton as-fed.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>$/ton</th>
<th>DIET</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>HIGH ROUGHAGE</strong></td>
<td><strong>LOW ROUGHAGE</strong></td>
<td></td>
</tr>
<tr>
<td>Grass Hay</td>
<td>$150</td>
<td>35%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Gin Trash</td>
<td>$45</td>
<td>35%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Distillers Grains</td>
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<td>15%</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td>Soybean Hulls</td>
<td>$260</td>
<td>15%</td>
<td>35%</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL $/t</strong></td>
<td></td>
<td><strong>$153.00</strong></td>
<td><strong>$227.00</strong></td>
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</tr>
</tbody>
</table>

This ration is for example purposes only and does not consider trace mineral and vitamin requirements.

Average Daily Gain

Generally speaking, the average daily gain of cattle would be less on a high roughage diet compared to a low roughage diet. The high roughage diet example provides sufficient calories for 1 lb/day gain; whereas, the low roughage diet example provides enough calories for 2.5 lb/day gain.

Feed Conversion

Feed conversion is very important to track as it provides a means to examine feed cost to value of gain. Feed conversion is better measured than predicted and is commonly misinterpreted. Sometimes the question asked regarding feed conversion is “How much do I need to feed to get X pounds per day of gain?” For example, the estimated conversion of the high roughage diet is 15:1 (lb feed:lb gain) and the low roughage diet is 6:1. A common mistake is to assume that if 15 pounds of the high roughage diet will provide 1 lb/d gain, to get 1.5 lb/d gain feed 22.5 pounds. The problem with this assumption is it would be very unlikely for calves to consume 50 percent more feed due to physical fill limitations. By monitoring feed conversion, cattle producers can reformulate if feed conversion isn’t sufficient to be profitable. Waiting until 30 to 45 days before marketing to make this decision may not provide sufficient time to fully recover the weight difference.

Cost of Gain

Calculating feed conversion is beneficial for evaluating the difference between cost of gain and value of gain. Combining the knowledge of feed cost with feed conversion, the high roughage example has a $1.15 feed cost per pound of gain and the low roughage example has a $0.68 feed cost per pound of gain. If cattle were bought weighing 475 pounds at $160/cwt and expected to sell for $135/cwt when weighing 750 pounds, the value of gain is $0.92/lb. The difference between value of gain and cost of gain is +0.23 and +0.24 for high and low roughage systems, respectively.

Target Market Weight

Target market weight will affect the number of days on feed. If cattle have a 750-pound target market weight, calves gaining 1 lb/d with the high roughage diet will require 275 days to reach their target weight, whereas the low roughage diet will require 110 days. Market timing is just as important as market weight. One-way price slides can add additional cost if cattle are sold for a minimal weight at a future delivery date. For example, if these cattle were contracted to weigh 750 pounds at delivery in 120 days but fed the high roughage diet, their delivery weight would be 595 pounds. Instead of receiving a greater price per pound if the slide moves in two directions, price may be restricted to the value per pound for a 750-pound calf. As a result, the difference between value of gain and cost of gain for the high roughage diet may be as great as -0.79.

As input costs continue to rise, cattle growers must avoid the “cheap feed” trap. Never base diet strictly on the cost per ton of feed. The use of low-cost roughages to stretch pasture may not be any more cost effective than reducing stocking rate. Ingredients must be examined for the nutritional value as well as their cost.

For more information on understanding the nutritional value of feed ingredients and evaluating costs and returns to feeding decisions, visit your local county Extension office.