UNIVERSITY OF MISSOURI
Extension
LIVE. AND LEARN.

# AG NEWS & VIEWS

BARTON, CEDAR, JASPER, MCDONALD & NEWTON COUNTIES

February 2012

In this issue:



**Ed Browning**
Natural Resource Engineering Specialist
Courthouse
Carthage, MO 64836
browningc@missouri.edu
(417) 358-2158

**Dona Goede**
Livestock Specialist
113 South Street
Stockton, MO 65785
funkd@missouri.edu
(417) 276-3313

**John Hobbs**
Agriculture and Rural Development Specialist
P.O. Box 336
Pineville, MO 64856
hobbsjc@missouri.edu
(417) 223-4775

**Jay Chism**
Agronomy Specialist
801 E. 12th Street
Lamar, MO 64759
chismj@missouri.edu
(417) 682-3579

**Dr. Jodie Pennington**
Small Ruminant Specialist
601 Laclede Ave.
Neosho, MO 64850
penningtonj@missouri.edu
417-455-9500

## Ketosis or Pregnancy Toxemia in Does and Ewes

**by Jodie Pennington**

Ketosis is an energy shortage which results in an increase in ketones throughout the body. The ketones increase as the body mobilizes fat to meet its energy needs. The increase can be detected noticeably in the blood, milk, urine, and breath. Ketosis most often occurs in late pregnancy or early lactation.

Lactational ketosis is observed primarily in high-producing dairy goats. Late pregnancy ketosis (gestational ketosis or pregnancy toxemia) is encountered in sheep and goats carrying multiple fetuses, especially in goats that are too skinny or too fat. Goats appear to be more resistant than ewes to ketosis. Ketosis is not a transmittable disease from one doe or ewe to another.

Symptoms: Does and ewes suffering from ketosis appear lethargic, sluggish and often fail to eat. One of the first symptoms noticed is often an unwillingness to eat. They become depressed, weak and have poor muscle control and may grind their teeth. Many times, when they lie down, they are unable to rise. Pregnancy toxemia occurs most often within 1 to 3 weeks before parturition and lactational ketosis is 1 to 6 weeks after parturition although the times may be extended.

Early in the disease, does or ewes will show a positive test for ketone bodies in the urine. The breath of does and ewes will have a sweet or foul smell. Ketone bodies are by-products of fat breakdown found in the blood and urine. Test kits are available for ketone bodies in sheep and goats as they are used in dieting humans and they are easy to use.

Cause: Pregnancy toxemia is caused by the sudden extra demand for energy by the fast -growing kids or lambs in the last few weeks of pregnancy when seventy percent of fetal growth occurs. It is usually seen when the ewe or doe is carrying two or more babies. At the time when the unborn kids or lambs are growing very rapidly, additional energy is needed in the diet. However, total space within the mother's body is limited and there may not be enough room for both the unborn young and the extra feed needed to feed them.

Does or ewes consuming large amounts of hay need a greater internal space in the rumen, which causes decreasing space for growth of the kids or lambs in the uterus. In meeting the nutritional needs of the kids or lambs, the doe or ewe will metabolize or break down fat resources from her body to maintain pregnancy, thus increasing ketones. The increase in feedstuffs high in energy must be supplied on a daily basis since space is limited in the rumen. Does and ewes that are too fat are also more likely to experience pregnancy toxemia.

***Continued on page 5***

## Nutritional needs for late gestation
**by Dona Goede**

For the cattle producers that calve in the spring, now is a very important time for your cattle nutritionally. Late gestation and early lactation are some of the most important stages of production. Recent research has shown that this time in production is when fetal programming occurs. Essentially, late gestation nutrition sets up or programs to some extent how that developing calf will respond to its world after birth. There are long term implications, either to the detriment of the calf or to its advantage.

The majority of fetal growth occurs in the last seven weeks of gestation. That fetal calf needs to gain on average about 0.9 lbs/day during the last trimester. Colostrum production starts at about 6 weeks prior to calving. Nutrition affects the nutrient supply to the fetus and it affects the quality of colostrum. Falling short on the nutritional requirements of the late gestation cow is not a wise strategy if the goal is to produce a healthy calf that will grow well from day one.

If the cow, or heifer, is nutritionally deficient during late gestation, it can have long-term impacts on the calf's performance, as the number of skeletal muscle fibers is set at birth, and nutrient restriction during gestation can reduce the body weight of offspring, even out to 30 months of age.

So, what can be done to prepare for late gestation nutritional needs? Those needs are crude protein levels in the 9 to 10% range and TDN (total digestible nutrients) in the 57-60% range. That TDN requirement could get bumped up if there are adverse weather conditions. The first thing that should be done is to find out what level of nutrients your hay can provide. Collect a hay sample of your hay and send it in to a lab to get it analyzed. Hopefully it will test high enough to meet late gestation nutritional needs and that will be your plan.

If your hay test results are not favorable and they fall short of 10% CP and 60% TDN or if you don't have enough of this higher quality hay to get all the way through late gestation, then what do you do? Here are some suggestions:

- Remember that although we use percentages as our guide for nutritional needs, the cow eats pounds, not percentages. In other words, the cow needs a certain number of pounds of crude protein and pounds of TDN. Better quality forages allow a cow to increase its intake because the digestibility and passage through the rumen is faster as compared to low quality hay. So, limit feeding better quality hay rather than providing it free choice can help to stretch limited supplies while still meeting cow nutritional needs.
- A similar strategy is to feed smaller amounts of hay more often. This results in less waste and again stretches limited amounts of good quality hay.
- If you have the ability to do it, grinding forage should be considered. Grinding forage can increase its digestibility 30 to 35%. This means that hay that normally would only meet mid gestation needs could meet late gestation needs. This is because the cow can eat more of that forage when it is ground. Since cows need pounds of energy, eating more pounds of a lower energy forage can meet the nutritional pound target. Can you work with an equipment dealer to rent a tub grinder or can you purchase one with several neighbors?
- Another method is the use of a feed additive to aid microbial enzyme production and digestion of forage. There are several of these products on the market.

## Private Pesticide Applicator Class

The Cedar County Private Pesticide Applicator Class will be on March 19, 2012 at the Cedar County Health Complex Community Room, located on Hwy J in Stockton, from 1-4 pm.

This class is for current license holders and for those seeking to obtain their license for the first time. If you currently hold a license and it will be expiring this year we encourage you to attend this class.

The cost is $12.00 for a Pesticide Reference Manual (M87). If you already have a current manual you must bring it with you to the class to verify. If you have the correct manual the $12.00 fee will be waived.

To sign up for a class please contact the Cedar County Extension Office at 417-276-3313

# Renovating Pastures? Try Frost Seeding

**by John Hobbs**

Pasture renovation can be accomplished through a variety of methods. Although conventional tillage, minimum tillage and no-tillage usually have higher rates of success and reliability, frost seeding is a less expensive option that can be used to renovate pastures. The practice of frost seeding has long been used by forage producers as an effective means to improve pasture yields or change forage species composition. Frost seeding is a relatively low-cost practice that, when implemented at the correct time and managed properly, can yield successful results.

**Steps for Successful Frost Seedings**

1. **Site Selection:** Frost seeding can be used at any geographical location but is particularly effective where tillage can create potential erosion problems. Sites where maximum seed-to-soil contact can be achieved are essential. Thinning grass stands have been a preferred site to use frost seeding. A bunch-type grass, such as fescue, offers a more favorable environment for frost seedings than does a sod-forming species, such as bluegrass. Regardless of the current grass species present, the site should be closely grazed in the fall or winter to open the stand and expose soil. A chain drag or light disking can also be used to help open the stand. This will increase the opportunity for seed-to-soil contact.

2. **Soil Fertility:** Proper soil pH and fertility are essential for efficient forage production. Soil tests should be taken every 2 to 3 years to determine nutrient status. Tests should be taken at least six months prior to seeding to allow for corrective measures.

   For optimum production, soil pH should be maintained above 6.0. Regardless of the seeding method used, corrective applications of phosphorus and potassium should be applied prior to seeding. If you are frost seeding a legume, applications of nitrogen should not be made the year of the seeding because of the potential for increased competition from grasses.

   Frost seeding should not be considered as a substitute for poor fertility management. If a poor pasture is the result of low fertility, frost seeding will not remedy this situation.

3. **Species Selection:** Historically, most frost seedings have been made to introduce or increase a forage legume species into an established grass stand. The producer needs to select the legume best suited to the soil conditions and intended use.
   Forage quality is improved when legumes are added to grass stands. Quality improvement is seen in increased palatability, intake, digestibility, and nutrient content. Research has proven that legumes will improve animal growth rates, milk production, and reproductive efficiency.

   Red clover has widely been accepted as the legume of choice for frost seeding. Red clover has high seedling vigor and is somewhat tolerant of a wide range of conditions relating to pH and fertility, drainage, and drought. While work is being done to improve the persistence of red clover varieties, it must be treated as a biennial and will probably require reseeding every two years.

   Red clover has proven highly effective as a means to improve the productivity of fescue stands. Fescue is recognized for its vigorous seedlings, responsive growth with adequate fertility levels, and as a superior species for use in stockpiling programs. However, fescue is also associated with complications arising from infections of the endophyte fungus, poor palatability, and low production in the summer months.

   Research has shown the benefits of introducing red clover to grass stands. Research conducted at the University of Kentucky (Taylor et al, 1978) compared renovating a fescue pasture using red clover at 6 lbs/acre compared to fertilizing the grass with 90 or 180 lbs/acre of nitrogen. Red clover growth with fescue produced higher yields than fescue fertilized with nitrogen at either level.

***Continued on page 4***

**Minimum Fertility Recommendations**

| Forage | pH | Phosphorus soil test Pounds per acre | Potassium soil test |
|---|---|---|---|
| Alfalfa | 6.5 | 40 | 300 |
| Red Clover | 6.0 | 25 | 250 |
| White Clover | 5.5 | 25 | 250 |
| Birdsfoot trefoil | 5.5 | 20 | 250 |
| Lespedeza | 5.0 | 20 | 200 |

*Continued from page 3*

Other legumes can be added to grasses through frost seeding. Birdsfoot trefoil is difficult to establish but is bloat-free and when established, does well in a wide range of conditions. Ladino clover will last somewhat longer than red clover, but is less tolerant of low fertility, drought, and overgrazing. The high cost of alfalfa seed, makes it a less desirable option for frost seeding and is not compatible to the rocky, shallow Ozark soils. Regardless of the species, all seedings should be made with high quality seed. While frost seeding is an economical practice, there is no justification to use low quality seed. The economics will be in favor of high quality seed when you consider the entire lifetime of a stand.

There is less experience with trying to establish cool-season grasses through frost seeding. It does appear that grasses do not establish with the same level of success as do legumes. Broadcasting grass seed can present some problems when mixed with legume seed, as the grass seed will not spread as far. Therefore, it is recommended that grasses be seeded separately from legumes when using a broadcast seeder. Minimal work or success rates have been reported with attempts to add grasses to established grass stands through frost seeding.

Work done at the University of Wisconsin (West and Undersander, 1997) compared frost seeding establishment of several cool-season grasses into older established alfalfa stands. Results from this two year trial showed that perennial ryegrass and orchardgrass exhibited the best establishment success, while reed canarygrass and timothy had the least success.

4. **Seeding Rates**

| Forage Species | Seeding Rate (lb/A) |
|---|---|
| **Red clover** | **10** |
| **Birdsfoot trefoil** | **8** |
| **Ladino Clover** | **1 to 2** |
| **Alisike Clover** | **3 to 4** |
| **Alfalfa** | **10** |
| **Annual Lespedeza** | **25** |
| **Orchardgrass** | **2 to 5** |
| **Perennial Ryegrass** | **3 to 5** |

These stated seeding rates are based on traditional establishments methods. Frost seeding may require higher seeding rates depending on the given location and desired level of production.

5. **Seeding Time and Method**: The basic principal behind frost seeding is the "honey-combing" action that is created by alternating freezing and thawing cycles in late winter. This activity helps to incorporate broadcast seed into the soil surface. To take advantage of these environmental changes, frost seeding should occur in late winter in Southwest Missouri. The trampling effect of high livestock densities can also be effective to ensure seed-soil contact. Use caution when frost seeding on top of snow as rapid meltdown of snow may result in the runoff of seed.

Frost seeding can be accomplished with any broadcast type seeder. A 3-point tractor mounted hitch seeder has been used. In recent years, seeders mounted onto all-terrain vehicles (ATVs) such as four-wheelers have become a popular choice for seeding.

6. **Seed Treatments:** Seed treatments containing nitrogen-fixing rhizobia bacteria are widely available for most common legumes. Rhizobia bacteria does survive in soil, so if the legume of interest is present in low amounts in the field to be seeded, rhizobia coating is usually not required. If the legume is not present in the pasture, then a rhizobia seed coating is recommended.

Frost seeding can be an effective, economical means of introducing a new forage species to an existing forage stand or to maintain the current composition of a stand. This practice has been very useful for helping farmers reduce the effects of endophyte-infected fescue. Frost seeding is frequently implemented where tillage is not a viable option because of erosion concerns. Desired results can be obtained when attention is paid to site selection, fertility, species selection, seeding rates, seeding times and method.

***Continued on page 5***

*Continued from page 4*

**Table 3. Recommended Seeding Rates for Frost Seeding into an Existing Grass or Legume Sod**

| | *Rate (lb./acre)* | | *Expected Established Plants* |
|---|---|---|---|
| **Species** | **Seeded Alone** | **As Part of Seed Mixture** | **Plants per square foot** |
| Red Clover | 4 - 8 | 3 - 4 | 2 - 5 |
| Birdsfoot Trefoil | 4 - 6 | 2 - 3 | 6 - 9 (in 2nd year) |
| Alfalfa | 5 - 8 | 3 - 4 | 4 - 6 |
| Ladino Clover | 2 - 3 | 1 - 2 | 1 - 2 |
| Alsike Clover | 2 - 4 | 1 - 2 | 2 - 3 |
| Perennial/Annual Ryegrass | 8- 15 | 2 - 3 | 10 – 12 |
| Orchardgrass | 3 - 4 | 1 - 2 | 4 |
| Smooth Bromegrass | 12 | 8 - 10 | 1 – 2 |
| Reed Canarygrass | Not recommended for frost seeding | | |
| Timothy | Not recommended for frost seeding | | |

* Expected plants based on "alone" seeding rates
** Use higher rate in "bare ground" situations and lower rate in existing sods

*Continued from page 1*

***Ketosis or Pregnancy Toxemia in Does and Ewes***

Lactational ketosis occurs when fat is being mobilized to meet the energy needs of a doe or ewe in parturition when milk production is increasing in the first weeks after parturition. Symptoms may be noticed within a few hours to 2-3 days after the metabolism is changing. In severe cases with no treatment, symptoms may progress to a coma or death.

Prevention: The goal should be to prevent ketosis rather than having to treat it. Avoid the conditions that cause ketosis. Make does and ewes are in proper body condition. Then feed enough energy to be sure that body condition is maintained—not too skinny or too fat.

Grain is a high source of available energy. Feeding 1-2 lbs. of grain daily along with high quality hay during the last four to six weeks of pregnancy will help prevent pregnancy toxemia. If the does or ewes are large, it may be necessary to increase the grain from 50% to 100%. Feeding grain first and having ample space at the feeders for each doe or ewe to get her share of the grain followed by hay feeding may help. Exercising the doe or ewe is quite helpful especially in the cold winter months when feeding is in drylot. Hay can be placed in feeders quite a distance from the barn to force the does or ewes to walk to the feed to increase their exercise.

In early lactation, the ration should be balanced to ensure the high-producing animals are getting adequate energy. The ration should change gradually from the dry period to the lactation period. Probiotics and B vitamins may help keep the animal eating.

Treatment: For the untrained, it is best to call a veterinarian. Treatment for ketosis involves injecting or drenching with a source of glucose: intravenous glucose (50% dextrose in 60-100 ml dose, followed by a 5% dextrose solution in an electrolyte drip), glucocorticoid steroids, adrenocorticotrophic hormone (ACTH) injections, oral drenching with sodium propionate or propylene glycol (up to 4 ounces or 120 ml/4 times a day), or commercially-available nutritional drenches in gel or liquid which may be more convenient than injections or infusions. Observe carefully as relapses may occur.

The treatment of pregnancy toxemia must be prompt to be successful. Providing energy in the form of molasses or syrup may not suffice. Treatment with propylene glycol at 60 to 90 ml (2 to 3 oz) by drench twice daily may help. Cesarean section to deliver the kids or lambs early will sometimes save the doe or ewe and the kids or lambs if they are near term. Corticosteroids may be used to abort the doe or ewe to prevent the loss of the dam. Kids or lambs may die shortly following the diagnosis of pregnancy toxemia due to lack of nutritional transfer from the doe or ewe to them. The sooner the kids or lambs are born, the less likely the doe or ewe will die.