SALE DATE SCHEDULED
We have set May 26th as our date to sell animals. Please call the Rhea County Extension office at (423) 775-7807 by May 15th and let us know the number of head you will be selling and if you need tags. We will meet at the Ag Center and Fairgrounds at 9:00 a.m.

SETGMA MEETING
We will be having a covered dish meal and meeting on Friday, April 7th at the Ag Center and Fairgrounds in Evensville beginning at 7:00 p.m. We will be discussing our upcoming sale in May and having a special program on pregnancy testing, bleeding animals, hoof care, body condition scoring, temperature checking and much more. We would like for you to bring a female sheep/goat that you think may or may not be bred. This will be a “hands-on” class. Bring your thermometer and hoof trimmers.

We will supply the needles, blood tubes and gloves. If you cannot bring your animal, please let us know, and we will try and provide one. Be sure to wear your old clothes.

Please call the UT/TSU Extension office at 775-7807 if you plan to attend. The Extension office will provide silverware, plates and drinks. Hope to see you on the 7th!

TN SMALL RUMINANT CONFERENCE SCHEDULED
The Tennessee Small Ruminant Conference will be held in Knoxville on the UT Ag Campus on May 18-20, 2017. This year’s program will cover dairy production, meat goats and sheep.


We will also have a trade show and door prizes. The cost is $100.00 per individual or $160.00 per couple. This includes lunch on Friday and Saturday. This conference will count for Master Small Ruminant Producer Certification. If you are purchasing equipment for TAEP cost share, Sydell will be at the conference. You must purchase before the TAEP deadline and mark your form back-ordered. Once you pick up the equipment at the conference, you can send in your pictures for reimbursement.

COCCIDIOSIS: DEADLY SCOURGE OF LAMB & KIDS
Coccidiosis is a parasitic disease affecting a variety of animals, especially mammals and birds. The causative organism is a microscopic, spore-forming, single-cell protozoa called coccidia.
Coccidia are from the same class or organisms (sporozoa) that cause malaria. Coccidian are classified into many genera in sheep and goats, coccidiosis is caused by the genus *Eimeria*. Within this genus, there are more than ten species of coccidian that are known to infect sheep or goats. Not all of the species are pathogenic or have the same level of pathogenicity. In fact, only a few are usually responsible for disease outbreaks.

Coccidia are host-specific, meaning the species of coccidia that affect poultry do not affect sheep and goats [5]. Even sheep and goats are affected by different species of coccidia. Attempts to cross-contaminate sheep and goats have failed.

A noteworthy exception is *Toxoplasma gondii*, which causes coccidiosis in cats and can cause abortion in sheep, goats, and people. Sheep and goats serve as an intermediate host for *Toxoplasma gondii*. Toxoplasmosis is a common cause of abortions in ewes and does in the U.S.

**Life cycle**

Coccidia have a very complicated life cycle, with many stages of development. As with other internal parasites, there is a free-living stage which takes place outside of the animal and a parasitic phase which takes place in the intestines of the host.

The egg-like structure of coccidia is called an oocyte. It is passed in the feces of infected sheep and goats. When first passed, the oocyst is not infective. It must undergo a period of development called sporulation (hatching). Sporulation requires oxygen and moisture. The time required for development is temperature-dependent. In general, the warmer the weather, the faster the development, unless the temperature is high enough to kill the organism.

After sporulation, the oocysts are very resistant to environmental conditions and cannot be killed by ordinary disinfectants. Extreme desiccation or direct sunlight are the only environmental factors which are detrimental to sporulated oocysts. In fact, a sporulated oocyst may survive for a year or longer if it is protected from direct sunlight.

When a sheep or goat ingests a sporulated oocyst, sporozoites are released and enter the cells lining the small intestines. The entire life cycle takes about 14 days. The damage done to the host is essentially that of intestinal cell destruction. The host cells affected most often are epithelial cells lining the gut which transport nutrients and fluids into the body.

**Transmission**

Lambs and kids between the ages of 1 and 6 months are most commonly affected by coccidia. In a survey conducted in the UK, 4 to 8 week old lambs were the most likely to be affected and 4 week old lambs were the most vulnerable to clinical disease. Many disease outbreaks occur shortly after weaning, as this is a very stressful period in the lamb or kid's young life. Bad weather may also trigger disease outbreaks.

Almost all sheep and goats are exposed to coccidia. Sheep and goats routinely ingest oocytes each day through feces, contaminated feed and water, or by licking themselves or another animal. Mature animals are largely immune to the effects of the parasite, but they serve as a reservoir of infection.

Coccidiosis is mainly associated with intensive production systems in which sheep and goats are housed in barns and dry lots. Fecal material is more concentrated in these production environments than if the livestock are kept on pasture. At the same time, outbreaks of coccidiosis are not uncommon in pasture rearing environments. Some pasture rearing situations can mimic confinement situations.

**Clinical signs**

As with most diseases, there are clinical and sub-clinical forms of coccidiosis. Sheep and goats with subclinical disease do not show obvious signs of the disease. They appear outwardly normal, but suffer from reduced feed consumption, feed conversion, and growth performance. Most cases of coccidiosis are subclinical and from an economic standpoint, subclinical coccidiosis is probably the most costly.

Clinical coccidiosis can be deadly and usually requires prompt treatment. The first sign of coccidiosis is that lambs and kids may not be
thriving as well as expected. Lambs may appear open fleeced. Kids may have a rough hair coats. Dirtiness around the tail may be observed, a result of mild diarrhea.

Soon, lambs and kids begin to lose their appetite and become weak and unthrifty. Lambs and kids may become anemic and strain to pass feces. As the disease condition worsens, affected lambs and kids may experience severe diarrhea, with streaks of blood, followed by severe dehydration and death.

Diagnosis
Diagnosis of clinical coccidiosis is based on flock history and observation of clinical signs, usually diarrhea. Fecal testing is of limited diagnostic value. While a oocyst count of 5,000 is considered clinically significant, not all coccidia are disease-causing or equally pathogenic. In addition, lambs and kids may become clinically-parasitized before shedding any oocytes. Therefore, a negative fecal test does not rule out coccidiosis, anymore than a positive test is indicative of disease.

There are many other disease conditions that cause symptoms similar to coccidiosis: some worms, overeating disease, salmonellosis, E. coli scours, cryptosporidium, and viral infections. Parasitized lambs and kids often suffer from mixed parasitic infections.

Treatment
For sheep and goats exhibiting clinical signs of coccidiosis, there are several treatment options (in the U.S.), including sulfa drugs, tetracyclines, and amprolium. Conventional anthelmintics (dewormers) have no effect on coccidiosis.

Amprolium (Corid®) can be used as both a treatment and preventative for coccidiosis. It is sold in liquid or powder form. When coccidia ingest Corid®, they experience a thiamine deficiency and die from malnourishment. Though rare, polioencephalomalacia (thiamine deficiency) has been reported as a side effect of treatment with amprolium.

Many sulfanamide medications can be used to treat coccidiosis. Sulfa medications are sold in liquid or powder form. Sulfa medication can be bitter tasting, so products may include flavoring, or jello can be added to reduce the bitter taste and promote adequate consumption by the animals.

Whenever medications are administered in the water, it is important that the medicated water be the only source of water. One of the limitations of water treatments is that there is no guarantee that every animal will receive the necessary amount of the medication. This is particularly true of an animal that may already be feeling poorly due to coccidia infection. For this reason, it is usually better to individual treat each animal with the medication. Severely parasitized animals should be penned separately, drenched individually with the medication, and receive necessary supportive treatment.

The medications used to treat coccidiosis are not FDA-approved for use in sheep and goats. Extra-label drug use by a licensed veterinarian is required. Producers must understand that just because a product can be purchased over-the-counter doesn't mean it can be used legally without the advice of a veterinarian. Beginning January 1, 2017, the sulfa antibiotics (e.g. Di-Methox®) that are used to prevent and treat coccidiosis will be transition from OTC to prescription status.

For producers outside the United States, Baycox® (Toltrazuril) and Vecoxan® (diclazuril) are treatment options. A single dose of Baycox® (1 ml/2.5 kg) is reported to be very effective at reducing oocyte shedding, as the drug is effective at all intracellular developmental stages (unlike coccidiostats). However, its meat withdrawal is 42 days for lambs. Vecoxan® (1 ml/2.5 kg) is also a single dose treatment. It has a zero day meat withdrawal period.

Prevention
As with most other diseases, it is far better to prevent coccidiosis than to treat it. By the time clinical signs have been observed, much of the damage has already occurred. Lambs and kids that survive a clinical infection may never recover from the performance set-back. They may always lack
the capacity to efficiently handle feed and fluids. Coccidiosis may be the cause of chronic poor-doers in the flock.

There are many management techniques that can help to prevent outbreaks of coccidiosis and minimize the effects of subclinical coccidiosis. Management should be aimed at reducing the fecal-to-oral transmission of the pathogen. Good sanitation and hygiene are essential. Maternity areas should be kept clean and dry. Lambing and kidding jugs should be cleaned between litters.

Pens should not be overcrowded. They should be kept dry and well-bedded. No feed should be fed on the ground or the floor of a pen. Feeders should be elevated or located on the outside of the pen. Water receptacles should be kept clean and free from fecal matter.

Good nutrition is essential to maintaining high levels of immunity in the flock or herd. Balanced rations, with proper vitamin and mineral supplementation, should be fed. Colostrum will provide immunity to coccidiosis for the first several weeks of the neonate’s life.

An adequate intake of colostrum will help lambs and kids cope with coccidial infection. Washing and drying the females udder before colostrum consumption may further help to limit infection.

It is best not to mix batches of young animals with batches of older animals or to have young animals follow older animals in a grazing rotation. Older animals, including older lambs and kids, serve as reservoirs of infection.

Stress is another contributing factor to outbreaks of coccidiosis. Sheep and goats should be handled minimally and handled calmly and gently. It is particularly important to minimize stress at weaning. Females should be weaned from their offspring, not vice versa. Lambs and kids should remain in familiar surroundings and in the same groupings. Fence line contact may reduce the stress at weaning.

The ration of weanlings should not be changed drastically for the two weeks preceding or following weaning. When lambs and kids are to be transported, they should not go without feed or water for very long.

### Coccidiostats

There are several feed additives that can be used to prevent coccidiosis in sheep and goats. Bovatec® (lasalocid) is FDA-approved for confined sheep. Rumensin® (monensin) is FDA-approved for confined goats. Deccox® (decoquinate) is FDA-approved for young, non-lactating sheep and goats.

Rumensin® can be toxic to dogs and equines. It can also be toxic to sheep and goats if it is not mixed properly. Always use a feed mill to mix any feed containing a coccidiostat. Feed mills have a much greater margin for mixing error.

Coccidiostats differ from treatment medications in that they do not kill the coccidial organisms. Instead they slow down the shedding of coccidia into the environment. For this reason, they need to be fed well in advance of the risk period, for at least 21 days before they are effective.

Many producers feed a coccidiostat to ewes and does during the late gestation period. This practice will help to lower the level of environmental contamination. Coccidiostats should be included in creep feeds and milk replacers. Lambs and kids reared on pasture should be fed a coccidiostat at least 21 days prior to weaning.

Adequate consumption is a limitation to the effectiveness of all coccidiostats. This is especially true if the coccidiostat is being delivered in a free choice mineral or lick, but it can also be a problem if the coccidiostat is included in the feed, as feed consumption may not be consistent or adequate, especially with young lambs and kids. For this reason, coccidiostats should never be considered a "cure-all" for coccidiosis. Their use needs to be combined with good management and sanitation.

Coccidiostats should be used strategically. They should not be fed year-round to all animals. As with conventional anthelmintics (dewormers), resistance will likely develop with continuous use.

### Natural control of coccidiosis

Coccidiostats have no meat withdrawal period and their use is permitted under most "natural" standards. For producers looking for an organic option, there is some evidence to suggest that oregano oil can be used to prevent and treat...
coccidiosis in livestock and poultry. It has a similar mode of action as ionophores. Studies have shown that sericea lespedeza (Lespedeza cuneata) also has the potential for reducing coccidiosis in lambs and kids. Lambs and kids fed sericea lespedeza pellets have demonstrated lower oocyte counts and reduced fecal (dag) scores than lambs and kids fed control diets.

GOAT BREEDS—TN MEAT GOATS

Tennessee meat goats were developed by Suzanne Gasparotto at Onion Creek Ranch in Buda, Texas. She selected Myotonic goats with the largest frames and heaviest muscles for breeding. The Myotonic goats were “improved” by breeding these larger and more muscled full-blood Myotonic goats to unrelated full-blood Myotonics. The resultant strain was named the Tennessee Meat Goat (TMG), which is a trademarked name.

Like Myotonic goats, TMGs are heavily muscled animals with a genetic condition called myotonia, which is a neuromuscular condition that causes them to stiffen and sometimes fall over for a few seconds when startled. This does not make them any more susceptible to predators than any other breed of goat.

Color combinations for TMGs include black and white, solid tan, tan and white, all white, black and roan. Bucks and does reach full maturity at four years of age. Does are reported to be easy kidders, excellent mothers and frequent twinners. They breed year-round.

Tennessee Meat Goats are registered through Pedigree International in Humansville, Missouri.

Sincerely,

Jerry Lamb
Extension Director

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<table>
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<th>Drug</th>
<th>Tradename</th>
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<th>Duration</th>
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<tr>
<td>Amprolium</td>
<td>Corid</td>
<td>1 pint of 9.6% solution in 100 gallons of drinking water</td>
<td>5 days</td>
<td>7 to 21 days</td>
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<td></td>
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<td>1 oz. (3 oz. 9.6% solution in 1 pint of water) per 100 lbs. daily</td>
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<td>Sulfadimethoxine</td>
<td>Albon</td>
<td>1 pint of 12.5% solution in 25 gallons of drinking water</td>
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<td></td>
<td>Di-Methox</td>
<td>4 cc of 12.5% solution per 25 lbs. of body weight daily</td>
<td>3-5 days</td>
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Sample dosages are from the fact sheet Coccidiosis in Lambs by Dr. Joe Rook, Michigan State University.