Save the Date

The 2017 Rinse and Return Recycling Program at the Fayette County Extension office is currently scheduled for October 5, 2017, from 10:00 a.m. until 12:00 p.m. The Rinse and Return Program is a voluntary, cooperative program sponsored by the Kentucky Department of Agriculture and the Agri-Business Association of Kentucky (ABAK). Other partners include the University of Kentucky Cooperative Extension Service, Farm Bureau, the U.S. Department of Agriculture’s Natural Resources Conservation Service and the local conservation districts, and the Ag Container Recycling Council.

Due to the materials previously held by these pesticide containers, they cannot be recycled with your ordinary household plastics. This program allows for the proper recycling of these pesticide containers.

More information will be provided in a later newsletter. It is also available on-line at http://www.kyagr.com/consumer/pest-and-recycling.html

UK Ag Equine Program Presents Equine Farm & Facilities Expo

On behalf of the University of Kentucky Equine Program, we would like to invite you to attend the 8th Annual Equine Farm and Facilities Expo. This Expo will be held on Thursday, June 8, 2017 at New Vocations at Mereworth Farm located at 719 Dolan Lane, Lexington, KY. This event will begin with registration at 3:30 p.m. and will run until 8:00 p.m. A meal will be provided courtesy of our sponsors.

A highlight of Expo will be equipment displays from companies throughout the Central Bluegrass area and a farm tour of the New Vocations at Mereworth Farm. Equipment displays will begin at 3:30 p.m. with the featured speaker at 5:00 p.m. There will be educational stations beginning at 6:00 p.m. Flyer is included in this newsletter.

If you have any questions and to RSVP for the meal, please call the Fayette County Extension Office at 859-257-5582.

The Fayette County Extension Office will be closed on Monday, May 29th, in observance of Memorial Day.
Researchers have rigorously studied small strongyles, or cyathostomins, and their impact on horses over the years. After all, these ubiquitous parasites affect virtually every grazing horse throughout the world. Scientists focused the bulk of that research, however, on adult horses rather than foals, and a recently published study suggests that small strongyles might not behave the same way in foals, potentially necessitating alternative treatment and management strategies.

“Data collected from 2014 to 2016 indicates that cyathostomin infection in foals progresses in a substantially different manner than adult horses,” said Martin Nielsen, DVM, PhD, Dipl. ACVM, associate professor and Schlakjer Professor of Equine Infectious Disease at the University of Kentucky’s Maxwell H. Gluck Equine Research Center, in Lexington. He co-authored the study on the topic with Eugene T. Lyons, PhD, a professor at the Gluck Center.

Researchers have a good understanding of small strongyles’ lifecycle in horses, regardless of age:

1. Adult parasites found in the lumen (middle) of the intestine lay eggs that pass in the feces and contaminate the environment;
2. Larvae hatch from these eggs and develop through first-, second-, then third-stage larvae (L3s);
3. Grazing horses ingest L3s, which travel through the gastrointestinal tract to the large intestine;
4. The L3s penetrate the large intestine wall and become encysted; and
5. Encysted L3s molt into fourth-stage larvae (L4s) and re-emerge from the intestine’s wall before developing into adults and laying more eggs.

Despite potentially being infected with tens of thousands of larvae, foals and horses rarely develop clinical disease associated with infection. The main exception is a condition referred to as larval cyathostominosis, which is reported to occur most frequently in horses 1 to 4 years of age. It occurs when large numbers of L4s emerge en masse causing damage to the wall of the intestine. Signs of disease include profuse watery, sometimes bloody, diarrhea; dehydration; and ventral edema (fluid swelling under the abdomen). While larval cyathostominosis is rare, its mortality rate can reach 50%.

In some cases, encysted L3s can suffer arrested development, or “hypobiosis,” and remain encysted in the intestine wall up to two years before finally molting into L4s and emerging from the wall. Encysted L3s appear to prefer taking up residence in the cecum and ventral colon rather than the dorsal colon.

“Little is known about encysted L3s, factors that promote their arrested development, what finally triggers the subsequent emersion of L4s, and which horses are at-risk of developing larval cyathostominosis,” Nielsen said. “This is especially true for foals because the bulk of our information was derived from studies using adult and juvenile horses.”

Researchers believe the strongyles’ arrested development could be impacted by season, previous anthelmintic (dewormer) treatment, and the animal’s immune status. It’s possible that horses previously exposed to small strongyles and capable of mounting an immune response against them could contribute to hypobiosis.

Based on their recent study on the topic, Nielsen and Lyons found that no difference in normal encysted L3 counts in foals among seasons. In contrast, adult horses/ponies, eL3 counts had significantly higher during seasons that were unfavorable for parasite transmission (e.g., winter season in northern climates).

They also found fewer encysted L3s in the wall of the foals’ dorsal colon, just like in adult horses.

“The results from this study suggest that although the life cycle of the parasite remains unchanged, the progression cyathostomin infection in foals occurs differently than in fully mature horses,” Nielsen said. “This information helps us understand that foals only rarely develop larval cyathostominosis, because they don’t have a large enough population of encysted L3s. This data also makes us questions the need for larvicidal therapy in foals.”

This latter point is important because unnecessary deworming contributes to the ever-increasing resistance to available chemical dewormers, and no new chemical deworming products effective against these internal parasites will be available in the foreseeable future, Nielsen said.

He also reminded owners that the main parasite infecting foals is roundworms (Parascaris), and foals should be tested and treated appropriately, especially considering resistance to chemical dewormers against roundworms also exists.

UK Ag Equine Programs Presents
Equine Farm & Facilities Expo
Thursday, June 8, 2017
3:30-8 p.m.
in conjunction with
New Vocations at Mereworth Farm
719 Dolan Lane, Lexington

Program
3:30 p.m. Registration
4 p.m. Walking tours & exhibitor booths
5 p.m. Welcome
5:15 p.m. Meal and announcements
6-8 p.m. Educational sessions, concurrently every half hour
- Barn Design – Dr. Bob Coleman
- Farm Site Planning– Dr. Morgan Hayes
- Horses on Pasture: Controlling Nutrient Intake– Dr. Laurie Lawrence
- Practical Horse Pasture Management- Dr. Ray Smith

Founded in 1992, New Vocations has grown into the largest racehorse adoption program in the country. Its mission to rehabilitate, retrain and rehome retired racehorses has led to the placement of over 6,000 individuals, with over 450 retirees entering the program each year.

Educational programs of Kentucky Cooperative Extension serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expression, pregnancy, marital status, genetic information, age, veteran status, or physical or mental disability.
Farmstead Design Training

Linking Environment to Farming (LEAP)

June 6, 2017

Woodford County Extension Office

6:30 p.m.

Farmstead Design Training will focus on the following aspects of developing a farmstead complex:

- Establishment of an integrated best management practice system to create a livestock complex
- Creation of a year round complex that utilizes all resources efficiently
- Utilization of renewable resources to create less dependency on grid based power and water systems
- Creation of a centralized operation that reduces inputs while increasing the quality of life for the producer and livestock
- Integrating these concepts into new and existing farm operations

A supper of burgers, chips and soft drinks will be served at the meeting.
Buttercups in Grazed Pastures
by Dr. J.D. Green, Extension Weed Scientist

One of the signs that spring has arrived is when the yellow flowers of buttercup begin to appear, but it’s during the winter months that the vegetative growth of buttercup takes place. As a cool season weed, this plant often flourishes in over grazed pasture fields with poor stands of desirable forages. In fact, many fields that have dense buttercup populations are fields heavily grazed by animals during the fall through the early spring months.

Buttercups are sometimes classified as short-lived perennials, but often grow as winter annuals. Plants typically produce five, shiny yellow petals in the early spring. There are four different species of buttercups that may be found in Kentucky: bulbous buttercup (Ranunculus bulbosus), creeping buttercup (Ranunculus repens), tall buttercup (Ranunculus acris), and small flower buttercup (Ranunculus arborvitius). Although each of these plants may have somewhat similar flower heads, each of these buttercup species differs somewhat in their vegetative leaf characteristics. New seed are produced during the time petals are showy. Waiting until after flowers appear can be too late to implement control tactics. This is one reason buttercups can survive year to year and new plants emerge each year.

Most buttercup plants emerge from seed during the fall or late winter months. Therefore, pasture management practices that improve and promote growth of desirable plants during these months is one of the best methods to help compete against the emergence and growth of this plant. Whereas, livestock animals allowed to overgraze fields during the fall and winter months is one of the main factors that contribute to buttercup problems. Mowing fields or clipping plants close to the ground in the early spring before buttercup plants can produce flowers may help reduce the amount of new seed produced, but mowing alone will not totally eliminate seed production.

For chemical control, herbicides registered for use on grass pastures that contain 2,4-D will effectively control buttercup. Depending on other weeds present products that contain dicamba+2,4-D (eg. Weedmaster), aminopyralid (eg. ForeFront, Milestone), trichlorpyr (eg. PastureGard, Crossbow), or metsulfuron (eg. Cimarron) can also be used. However, legumes such as clovers intersseeded with grass pastures can be severely injured or killed by these herbicide products. For optimum results apply a herbicide in the early spring (February - March) before flowers are observed, when buttercup plants are still small and actively growing. For best herbicide activity wait until daytime air temperatures is greater than 50 F for two to three consecutive days. Consult the herbicide label for further information on grazing restrictions, precautions, or other possible limitations.

For fields heavily infested with buttercup a variety of control tactics may be needed. Apply a herbicide to help reduce the population of buttercup plants in the spring plus use good pasture management techniques throughout the year to help improve and thicken the stand of desirable forages.

Tips to Controlling Weeds in Grass Pastures
By Dr. J.D. Green, Extension Weed Scientist

Using good pasture management practices can help minimize weeds and unwanted plants in grass pastures and hayfields. To get the most quantity and quality from pastures, use management practices that encourage growth of a vigorous, dense stand of forage grasses and limit germination and growth of unwanted plants. Weeds that reproduce by seed readily germinate in thin pasture stands, and unwanted plants are more prone to become established in these areas.

Good management starts with timely mowing and good grazing practices. Mowing before weedy plants can produce seeds helps prevent production and spread of weeds. Where perennial weeds dominate, frequent mowing can curtail growth by depleting their root reserves. If you use continuous grazing, be sure to avoid over-grazing that reduces the competitive capabilities of desirable forage species.

Maintaining the optimum soil acidity/alkalinity and fertility levels is another weed prevention practice. Soil test on a regular basis to ensure that proper nutrients are available for pasture growth and quality. Also, keep fence rows and adjacent fields free of troublesome weeds such as musk thistle, poison hemlock, and multiflora rose.

In some cases, herbicide use may be the most effective weed-control method. However, it’s important to remember that you may not be able to effectively control all weeds with a single herbicide product applied only one time. When considering herbicide use, determine the types of weeds to be controlled, their life cycles and the best time of year to apply the herbicide.

If possible, avoid applying herbicides in mid-summer, because many common products for pastures can injure nearby, sensitive broadleaf crops like tobacco, grapes, vegetables and ornamentals, especially under high air temperatures and humidity. Generally, the best times to apply herbicides to grass pastures is in late summer to early winter months or in the late winter and spring after plants begin actively growing, depending on the growth stage of target weeds. Remember to note any precautions and abide by any grazing or forage harvest restrictions.

As is true with any good weed management program, use a variety of practices to prevent and combat weed infestations in pastures. Timely mowing can be an effective mechanical weed control practice and grazing management can be a good cultural practice. Whereas, apply herbicides when the situation warrants their use.
Following a very difficult and disappointing 2016 growing season, 2017 could be another challenging year for Kentucky tobacco farmers. While aggregate contract burley prices and contract volume may not change much in 2017, individual company decisions appear to vary considerably across buyers compared to previous years. Burley contract volume remained relatively flat to down 5 to 7% for some contract growers, while one major buyer adopted a double-digit percentage drop across the board for their growers. In total, my best guess is that contract volume may be down by less than 5% for 2017.

Most burley contract prices by grade remain similar to last year, with some adjustments in the +/- 3 to 5 cents/lb. range. Noticeably, there was significantly more price volatility in lower stalk leaf (i.e., flyings) with one major buyer dropping X grades by 15 cents/lb. The weighted average contract price for #2 quality burley leaf among the top four buyers ranged from $1.86 to $2.00/lb. For 3rd quality leaf, the weighted price differential among the top buyers was nearly 25 cents/lb. Despite the significant price variability among companies, the overall weighted average burley contract price for the 2017 crop is similar to previous years. However, I would caution against using similar burley market prices received in recent years for 2017 budgeting purposes given the potential for overproducing the 2017 crop relative to anticipated demand levels.

### Weighted Average Burley Contract Prices by Grade

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<th>3</th>
<th>4</th>
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1/ Weighted Average Based on Estimated Percentage Volume Purchased By Buyer and Typical Crop Throw

USDA’s March planting intentions survey (conducted prior to most contracts being offered) revealed a 7% increase in Kentucky burley tobacco acres for 2017, with dark fire-cured up 5% and dark air-cured 10% higher. A very short 2016 dark tobacco crop coupled with continued growth in smokeless sales probably warrants a modest increase in 2017 dark tobacco acres. However, a similar statement cannot be made with much confidence for burley.

Assuming average national yields, the announced USDA planting intentions for burley would result in a U.S. burley crop exceeding 170 million pounds in 2017. In response to a declining domestic use (caused by declining cigarette consumption and increased import use) coupled with weak leaf export demand (caused by a stronger dollar and declining global burley consumption), a U.S. burley crop in excess of 130 million pounds would likely prompt a very volatile and selective market (i.e. more critical grading which could easily put downward pressure on market prices.)

As always, burley returns are extremely variable based on assumed yields and labor expenses. H2A wage rates for Kentucky for 2017 increased to $10.92/hr. compared to $10.85/hr. last year. Housing, travel, workers comp, and other fees must be taken into consideration for those employing this legal seasonal workforce. Most other input costs will remain close to last year’s levels as well. Assuming an average burley price of $1.90/lb. for the 2017 crop, 150 hours of hired labor coupled with relatively flat input costs generates the following net returns to compensate for a producer’s own labor, management and land under different net wage and yield scenarios.

### Net Returns to Land and Operator Labor and Management for Various Yields and Hired Labor Costs

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<th>$10/hr.</th>
<th>$12.50/hr.</th>
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<td>2250 lbs./acre</td>
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<td>2750 lbs./acre</td>
<td>$0.66</td>
<td>$0.52</td>
<td>$0.38</td>
</tr>
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</table>

1/ Based on an average market price of $1.90/lb. and 150 hours of hired labor/acre

Given these assumptions, improved yields and labor efficiency will be critical to generate a profitable burley crop in 2017.
Farm markets continue to expand in number and vendors across Kentucky. Market information to help with production planning, market location and season extension options is often in short supply. The Center for Crop Diversification (CCD) has been collecting market prices since 2004. We have recently launched the ambitious task of trying to develop 3-year summaries of the major crops to help vendors make better use of this data. A forthcoming report from the Center for Crop Diversification compares average prices for 17 crops from Kentucky farmers markets across the 2014, 2015, and 2016 seasons. Below we take a look at just a few of the graphs included in the report and consider some of the lessons producers might glean from them.

Tomatoes—one of the staple crops of summer markets—follow predictable pricing trends. Starting higher, and decreasing in price as field crops mature. Higher early season prices for many of these crops has become the driving motivation for adopting season extension tools like high tunnels. The gap between rural and urban prices is also expected – although differences aren’t equally as pronounced for all crops. Note the continual supply, with tomatoes reported in virtually every market as a staple item.

Blueberries and other small fruit are generally popular and in short supply for most farm markets, both rural and urban. Early and later varietals are among the strategies farms can employ to have product available at market for longer periods.

Note the considerable gaps in rural broccoli supply compared to the consistent supply at urban markets from April through the end of October. The fall is particularly noteworthy in rural markets where fall broccoli has done well but is sparsely reported. During those market windows, prices were comparable across market types.

Stay tuned for the full report from the CCD, featuring 17 different crops that are currently under review. The report will be made available at: www.uky.edu/ccd/pricereports/FM3yravg
The average age of farm operators in Kentucky is increasing, and over the next several years, many farm families will consider transitioning their farm to the next generation. The decision of when and how to begin the farm transition process can be difficult; often, farm families tend to avoid the issue because it can be a difficult topic to discuss. It is important to realize that at some point every farm business will experience a transfer of ownership, either with or without owner participation. The farm business can transfer in one of two ways: either as a viable farm business or as a set of assets. Typically, the goal of many farm families is to successfully transfer a viable farm business. Approximately 30% of family farm businesses successfully transfer to the second generation, with less than 10% successfully transferring to the third generation. The majority of failures occur following the owners death due to limited foresight, planning, and capital. However, with proper planning and family communication your farm business is less likely to become a failed statistic.

Many producers recognize the need to develop a transition plan. Creating a will or an estate plan is a step in the right direction, providing a means by which to distribute assets. However, a comprehensive farm transition plan takes a much more in-depth look at the farm business. A comprehensive farm transition plan can assist your family in successfully transferring the ownership and management of a viable family farm to the next generation. For many with a family farm, the primary goal of a farm transition plan is to facilitate the transfer of ownership and management of the farming operation. However, transition planning is also a tool to reduce estate taxes, help secure the financial future of both the new and retiring generations, develop management skills, and establish goals for your farm, such as keeping your land in agriculture. Finally, a sound farm transition plan can provide peace of mind that all family members understand the future plans for the farming operation.

Good family communication has been identified as one of the key factors leading to a successful transfer of the farm business to the next generation. Communication is the first step in developing a farm transition plan. Farm family transitions are typically smoother if heirs are allowed to provide input to the process, and family members have a shared vision. Often it is difficult to treat all heirs equally during the transition of a family farm; however, it is possible to treat all heirs fairly. Good communication about how and why certain decisions are made can be helpful to both on-farm and off-farm heirs. Each family has its own dynamics, and it is important to be conscious of the relationships between heirs and spouses, as well as the family business needs.

To ensure that your goals for the family farm reflect the vision of other family members, the first step is to schedule a family meeting and start an open dialogue about the process. A good family meeting typically takes place at a neutral location, not at the kitchen table or in the barn. Everyone needs to feel at ease to share his/her opinions. Additionally, do not try to tack a family meeting onto another family event. This is not a conversation to have during a holiday dinner. It is a business meeting and should be scheduled as one.

During the first family meeting, the idea is to begin the conversation about transitioning the family farm. Talking points to start the conversation include discussing with each heir how he/she perceives his/her role on the family farm. Talk with family members about what role each person would like to play during the process of transferring the family farm. It is also important to ask family members about their goals for the future of the farm. One important question to ask is whether the goals of the current owners and the potential heirs are similar. Once you begin the dialogue about how each family member feels about the farm transition process, then you can begin to address some of the more detailed questions. If you are considering transitioning your farm to the next generation, there are several key questions that need to be addressed. Typically, farm families find it helpful to work with a team to develop and implement a farm transition plan; team members may include a facilitator, accountant, attorney, and extension educator. Each member of the team can provide expertise in establishing a transition plan that will work within your family.
Baleage Mistakes Can Lead to Major Health Consequences
Source: Michelle Arnold, DVM (Ruminant Extension Veterinarian, UKVDL), Dr. Ray Smith, Livestock Forage Extension Specialist, and Krista Lea –UK Dept of Plant and Soil Sciences

Baleage or “wet wrapped hay” is simply forage of a relatively high moisture content that is baled with a round baler and then sealed in a plastic bag or wrapped in plastic, to keep oxygen out. Anaerobic bacteria (those that live without air) convert sugars in the forage to lactic acid which in turn lowers the pH and preserves the forage as silage, with full fermentation completed within 6-8 weeks. Round bale silage (“baleage”) is an alternative to baling dry hay that allows shorter curing time and saves valuable nutrients by avoiding rain damage, harvest delays, spontaneous heating and weathering if stored outdoors. Grasses, legumes and small grains can be effectively preserved by this method but only if proper techniques are followed. Forages should be cut at early maturity with high sugar content, allowed to wilt to a 40-60% moisture range, then tightly baled and quickly wrapped in plastic to undergo fermentation (“ensiling” or “pickling”), a process that should drop the pH of the feed below 4.5 where spoilage organisms will not grow.

Problems arise when conditions in the bale allow growth of disease-causing organisms and potentially fatal conditions in cattle.

Why do problems occur?

1. Forage cut at the wrong stage of maturity will not have enough fermentable carbohydrates for good ensiling. Coarse, stemmy and overly mature forages have less sugars available for completion of fermentation, especially once the seed head has emerged. Small grains including rye, oats, wheat, and barley have a narrow harvest window and should be cut before the boot stage.

2. Lower bale density makes round bale silage more susceptible to entrapment or penetration of oxygen and increases the chance of air pockets within the bale. Tight, dense bales wrapped with plastic twine, net-wrap or untreated sisal twine are less likely to spoil.

3. Baling at the incorrect moisture content is a recipe for disaster. Wet or non-wilted forages are more likely to spoil; bacteria from the *Clostridia* family thrive in wet environments where forage moistures are in the higher 67-70% range. Greater than 70% moisture almost guarantees *Clostridial* growth and spoilage. Conversely, forage that is too dry does not ferment but has greatly increased mold production.

4. Baled silage is also more likely to spoil due to damage to the plastic covering, resulting in the harmful introduction of oxygen. It is important not to puncture the plastic; isolate the area from cattle, pests and vermin. Anything that claws, bites or otherwise punctures the plastic sets the feed up for spoilage.

What are the health risks to cattle?

1. **Botulism** is a disease caused by one of the most potent toxins known to man. This toxin is produced by *Clostridium botulinum*, a spore-forming anaerobic Gram + rod. These spores are found everywhere in the soil and contaminate baleage during harvest, often by raking up dirt. In the absence of oxygen (as is found in wrapped hay) and a pH greater than 4.5 (poor fermentation), the spores enter a vegetative state, multiply and produce toxin. Two forms of the toxin, Types B and C, are found most frequently in KY cattle. Type B is associated with improperly fermented forage while Type C occurs from the accidental feeding of dead animals or poultry litter in the ration of cattle. Both types produce the same characteristic clinical picture in cattle of progressive muscle weakness leading to recumbency (downers) over a 2-5 day period of time, depending on the amount of toxin ingested. Signs may develop as early as 24 hours to as many as 10 days after ingesting the toxin. Death is due to paralysis of muscles of the diaphragm, dehydration, or complications from being a “downer”.

Listeriosis or “Circling Disease” is an encephalitis caused by the bacterium *Listeria monocytogenes*. This organism proliferates in soil, feces and rotting vegetation. It grows in cool temperatures and at a pH greater than 5.4 under anaerobic conditions. It thrives in baleage systems when limited fermentation and entry of air results in spoiled, moldy feed. Common places to find *Listeria* include spoiled silage at the end of trench silos, decaying forage at the bottom of solid feed bunks, and rotting hay or baleage. A very common mistake by producers is feeding too many bales at once. Baleage that sits out open to the air over several days will begin to rot and spoil, allowing bacteria and molds to proliferate. In order to produce clinical disease, *Listeria* must survive the fermentation process which it can easily do if the pH never goes below 5. Large numbers of bacteria may gain access to the body through the mucous membranes of the mouth (through small cuts) and travel up the nerves to the brainstem. Fever, anorexia (off feed), depression and neurologic signs develop depending on which cranial nerves are affected. Neurologic signs include leaning to one side, stumbling, circling in one direction, facial nerve paralysis, drooling, difficulty chewing, drooped lower jaw, and head tilt. Early intervention with antibiotic therapy is often successful but, if the cow

*Continued on next page*
goes down (becomes recumbent), the odds of survival are low despite aggressive treatment. The prognosis for sheep and goats with listeriosis is poor with an approximate 25% survival rate.

Infection with *Listeria* may also result in eye disorders and abortion. Anterior uveitis or “silage eye” follows conjunctival infection with *L. monocytogenes*. The symptoms are very similar to pink eye with tearing, blinking, and sensitivity to light early in the course of disease followed by development of a bluish-white corneal opacity (see photo) then pus and dead cells accumulate just behind the cornea in the anterior chamber. Treatment with long-acting antibiotics should speed healing. Listerial abortion can occur at any stage of pregnancy. The route of infection is through the GI tract into the bloodstream and then to the placenta causing fetal death.

3. Bacterial and fungal abortion is another possible consequence of poorly preserved forages. Forage baled and wrapped too dry provides excellent conditions for germination and growth of a variety of yeasts, molds and bacteria. Fungal spores are spread throughout the body by the bloodstream after inhalation or ingestion. Germination and growth of fungal spores in the placenta results in abortion, typically in the last 1/3 of pregnancy. If submitted to a diagnostic laboratory, fungal lesions are almost always identifiable in the placenta. Not all molds are dangerous though; many bales will develop some white surface mold due to small holes in the plastic but it does not penetrate deep into the bale. This outer layer can be removed at feed out or the cows will usually avoid eating these areas. Bacterial contamination of baleage results in similar abortion risks. *Bacillus* species proliferate in poor quality silage and are partly responsible for deterioration when air is allowed in the bale. Bacterial abortion due to *Bacillus* species occurs when cows ingest the organism which travels through the bloodstream to the uterus followed by growth of the organism in the placenta and fetus. Cows abort in the last month of pregnancy or calves may be born alive but die within 24 hours.

4. Poor quality baleage, if not adequately supplemented, will lead to loss of body condition in late gestation and early lactation, poor milk production and poor fertility.

The feed value of baleage is a function of forage maturity at harvest, baling, handling and storage. The best method to evaluate baleage is a forage analysis that includes a fermentation profile (see example). Important goals include pH<4.5 (definitely below 5), at least 2% lactic acid and greater than 5% total acids on a dry matter basis, and a volatile fatty acid score (VFA) above 5.

A fermentation report from Dairy One Forage Testing Lab (Ithaca, NY) on a sample of poor quality wheat baleage. Legend: The black bar=your results; white bar=Goal Value; grey bar=typical values. Prevention is based on ensuring proper harvest and preservation of wrapped forages and maintaining proper feedout rates to reduce the risk of growth of organisms dangerous to cattle. Correct moisture content is of primary importance; there is a field method to assess moisture that will yield a general idea of moisture content but there are far more accurate methods available. Cut forage at the proper stage of maturity so it contains adequate levels of fermentable carbohydrates for good ensiling. See Quality Hay Production (AGR-62) for specific cutting recommendations for various forage crops [http://www2.ca.uky.edu/agc/pubs/AGR/AGR62/AGR62.htm](http://www2.ca.uky.edu/agc/pubs/AGR/AGR62/AGR62.htm). Also, achieving the highest bale density possible, especially with high internal core densities, removes the maximum amount of oxygen with few air pockets. Wrapping the bales quickly after baling with a good quality plastic, preferably with an ultraviolet inhibitor and 6-8mm thickness, and using multiple (4-6) layers will extend the storage time. Bale weight can be a safety and equipment issue. Details of proper techniques can be found in the UK Extension Fact Sheet AGR-173 entitled “Baling Forage Crops for Silage” at your local extension office or on the web at [http://www2.ca.uky.edu/agc/pubs/AGR/AGR173/AGR173.pdf](http://www2.ca.uky.edu/agc/pubs/AGR/AGR173/AGR173.pdf). Another excellent resource is the UK Forage website for more information: [http://www.uky.edu/Ag/Forage/ForagePublications.htm#Silage/Baleage](http://www.uky.edu/Ag/Forage/ForagePublications.htm#Silage/Baleage) and look for Baleage: Frequently Asked Questions.

Continued on next page
Example below of great baleage!

Moisture Testers

Two types of forage moisture testers are available: one type utilizes heat and the other type utilizes electronics. Heat-type moisture testers consist of a heater/fan drying unit, a screen-bottomed sample container, and a simple spring scale. Moisture content is determined by filling the sample container with a fixed amount of wet forage and drying the forage to a constant dry matter percentage. The mass difference between the wet and dry forage is used to determine the initial forage moisture content. Most heat-type moisture testers require 25 to 35 minutes to operate.

Electronic moisture testers provide an instantaneous moisture content reading, but there is some question of their accuracy when testing wet forage (most are made to test hay). Most electronic-type testers are comprised of a sensing probe and a hand-held display unit. The electrical conductance of the forage is measured between two metal contacts at the tip of the probe when inserted into the forage. Testers determine forage moisture content based on the relationship between moisture content and electrical conductivity.

Heat-type moisture testers tend to be more accurate than electronic moisture testers, although results can be affected by many factors including the effects of hay drying agents. Either type of moisture testers can be purchased from agricultural supply houses, such as NASCO, for around $300.

A relatively new technology is a hand-held device that uses Near Infra-Red (NIR) scanning technology to measure the moisture content of animal feed. This unit comes with software to collect, view, and store recorded measurements.

Microwave Oven Method

The microwave oven method to calculate forage moisture content allows reasonably accurate results to be obtained in a relatively short time. This method takes about 20 minutes to complete. However, the measured moisture content is much more accurate than when using electronic moisture testers.

Before using the microwave oven method, obtain the following items:

- Microwave oven
- Scale (must weigh in grams)
- Microwave safe plate
- 10- to 12-ounce cup of water
- Pencil and paper

Use the following procedure to obtain the best results:

1. Obtain a representative forage sample (whole plants).
2. Cut the sample into 1-inch pieces; keep leaves and stems uniformly mixed.
3. Place a paper towel on the plate.
4. Weigh a plate plus 100 grams of forage sample; spread the sample as uniformly as possible.
5. Place a 10- to 12-ounce cup of water in the corner of the oven to capture unabsorbed microwaves as the plant tissue dries to prevent potential fire.
6. Set oven on HIGH for 5 minutes.
7. Weigh sample and plate and record.
8. Change the water in the glass.
9. Set oven on HIGH for 2 minutes.
10. Weigh sample and plate and record.
11. Repeat steps 7 through 10 until weight does not change more the 1 gram (this means the sample is dry).
12. Percent moisture = 100 grams – final weight grams.

Make sure to heat samples in short intervals to prevent the forage from igniting.
The Use of Temporary Fence
Source: University of Kentucky Master Grazer Educational Program

The practice of rotational grazing allows forages a rest period that permits them to initiate regrowth, renew carbohydrate stores, and improves yield and persistency. A rotational grazing system divides a larger pasture into smaller paddocks allowing livestock to be moved from one paddock to another easily. The time spent grazing a paddock should be flexible depending on the paddock size as well as the weather, forage availability, and plant growth rate. Having a movable or temporary fencing system allows for maximum flexibility, especially for those just beginning to practice managed grazing.

When choosing a temporary fencing system for your operation, it is good to have an understanding of the different fencing materials that are available. There are different combinations of electric fencing wire, posts, and energizers to choose from.

Since temporary fences are electrically charged with an energizer, it is good to know which type will work best for your operation. There are two main types of fence energizers, high-impedance and low-impedance. High-impedance chargers have long pulse lengths that can cause current to arc and heat up in the wire. If the fence comes in contact with weeds and grass, it can cause a fire and melt polywire or polytape.

Low-impedance chargers resist arcing because they have a quick, intense pulse. Low-impedance chargers have a greater capability to power long distances of single or multi-wire fences.

Even though there are only two types of chargers, there are different variations of each type. Many brands offer AC-powered charger (plug-in), a battery-powered (DC) charger, and a DC powered charger that has a recharging system (voltaic or solar panel) built into the unit, known as “solar-powered” charger. If your fields are close to a power source, an AC-powered charger is your best source for reliable power, and is generally less expensive than DC-powered chargers. When this is not an option, use a DC-powered charger of your preference. The “solar-powered” unit is more expensive at initial purchase, but will require less attention than a DC charger that requires the batteries to be replaced and recharged periodically. It is generally recommended to buy the best charger you can afford because it is the foundation of your temporary fencing system.

There are two basic types of temporary electric fence wire on the market: polywire and polytape. Both are made up of fine metal filaments braided with strands of plastic fibers. Most producers use polywire instead of polytape because it is less expensive. However, polytape is more visible to livestock and deer but also has greater electrical resistance. Polywire is offered in different colors. The color should contrast with the surrounding and white is the most common because it is more visible to cattle and deer than most other colors. Many brands offer different variations of both polywire and polytape related to how many strands of metal filaments are in the wire. The more metal strands, the more conductive the wire and the more expensive it is. Higher strand polywire / polytape also tends to last longer. A wire reel is the next essential piece to aid in moving the temporary fence. Rolling wire around your arm, like an extension cord, or onto a stick will cause the wire to kink causing the metal filaments to break and the wire will not conduct electricity properly.

When installing a temporary fence, four different types of posts are available. Plastic posts with built-in treads are more convenient when anticipating moving the fence frequently because they allow one to step the posts into the ground and have pre-molded loops for wire. Plastic posts are made from a heavy duty, UV-resistant polymer compound so they will last longer, even though the life expectancy is only three to five years for this style of post. Metal pigtail posts that are step-in are also available and these have a loop to run the wire through. These are slightly more expensive than other styles of temporary posts. Fiberglass rods are better for situations when the fence is not going to be moved as often because these have to be hammered in the ground. These rods require the use of wire clips or plastic insulators that slide on the rod to hold the wire in place, or have holes drilled through them with cotter pins holding the wire. They are less expensive than plastic posts and can last up to 20 years. Many producers use 3/8” metal rebar posts accompanied by slide-on plastic insulators. These posts are hammered in the ground as well, and are cheaper and last longer than plastic or fiberglass posts. Metal “T” posts are the strongest and last the longest of temporary posts, but they do require more labor to install and remove, and are also more expensive than the rest. Insulators can be lost as well from deer running through the fence. These are less flexible than the other types but work well as corner posts or when making sharp turns in the fence line. The general distance between posts in a fence is between 20 to 30 feet, depending on the terrain of the land.

A fencing setup that works for someone else may not work for you. Depending on how many times you move the fence, the temperament of your animals, and expense are all factors that you will have to consider. Using temporary fence correctly can help you implement an effective managed grazing program.
Rotational Grazing Practices Improves Soils
Source: University of Kentucky Master Grazer Educational Program

Implementing rotational grazing practices improves forage productivity. Plants often show an improvement not only in growth but rate of regrowth. Improvements in soils seen by rotationally grazing directly impact forage growth. These benefits are realized through reduced erosion, decreased soil compaction, and improved manure distribution.

More Groundcover Decreases Erosion
When using rotational grazing, cattle should be removed from cool-season pastures when residual forage is three to four inches high. By leaving this amount of forage, the soil is protected from rain, wind, and trampling while minimizing runoff and erosion. Thus, more water is made available for plant growth. Reducing soil erosion allows for nutrients and organic matter to be retained. In addition to protecting soil structure, leaving adequate forage height improves forage regrowth.

Compaction Reduced
Rotating cattle to a new paddock or pasture every three to seven days reduces time cattle spend creating high traffic areas. Areas for shade and water need to be rotated or constructed with materials which decrease soil compaction. Compaction is detrimental to soils because it restricts air and water movement. When soils are compacted pore space is reduced which changes soil structure, water infiltration capability, and amount of organic matter. Air and water movement are important for plants to take up nutrients and retain soil organic matter. Thus, a sacrifice area is important during wet conditions.

Better Distribution of Manure
When paddocks are designed so that cattle travel no more than 800 feet to water, manure is more evenly distributed. Manure contributes organic matter and nutrients to soils. Besides manure, organic matter in soils comes from decaying roots and plants leaves. Providing organic matter to soils increases plant root health and forage productivity.

When cattle are rotated in a regular pattern, grazing pressure is more uniform. Uniform grazing pressure allows producers to have consistent groundcover, reduced compaction, and increased soil organic matter, all of which builds soils. Soil is important because it allows for greater forage production. The greater forage production, the more day’s cattle can graze and less time is spent supplementing with hay and grain.

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Beef Stroganoff

**Ingredients:**
- 1 pound beef (lean, top round)
- 2 teaspoons vegetable oil
- 3/4 tablespoon onion (finely chopped)
- 1 pound mushroom (sliced)
- 1/4 teaspoon salt
- 1/4 teaspoon black pepper
- 1/4 teaspoon nutmeg
- 1/2 teaspoon basil (dried)
- 1/4 cup white wine
- 1 cup yogurt (plain, low-fat)
- 6 cups pasta (cooked in unsalted water)

**Directions:**
2. Add beef and sauté for additional 5 minutes. Turn to brown evenly. Remove from pan and keep hot.
3. Add remaining oil to pan; sauté mushrooms.
4. Add beef and onions to pan with seasonings.
5. Add wine and yogurt; gently stir in. Heat, but do not boil.

Notes: If thickening is desired, use 2 teaspoons cornstarch; calories are the same as flour, but cornstarch has double thickening power.

Source: Woodford County Extension

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Asian Asparagus Salad

**Ingredients:**
- 1 pound fresh asparagus
- 1½ tablespoons low sodium soy sauce
- 2 teaspoons sugar or artificial sweetener
- 1 tablespoon olive oil
- 2 teaspoons sesame seeds

**Yield:** 4, ½ cup servings

**Directions:**
1. Snap off and discard the root ends of the asparagus.
2. Wash remaining stalks thoroughly.
3. Slice stalks into 1½ inch lengths on the diagonal.
4. Blanch asparagus for 1-3 minutes in boiling water, until bright green in color.
5. Cool immediately under cold water and drain.
6. Combine soy sauce, sugar, olive oil, and sesame seeds in a small glass bowl. Mix dressing until sugar is dissolved.
7. In a gallon zip-seal bag, add asparagus and dressing. Turn bag to coat asparagus with dressing and chill in the refrigerator for 15 minutes. Turn bag again and chill for an additional 15 minutes before serving.

Source: Kentucky Proud “Plate it Up”