Management of Kentucky-31 Tall Fescue
Sarah Kenyon

Kentucky-31 tall fescue pastures are naturally infected with a fungus that grows between the cell walls of the plant. The fungus is called “the endophyte” because endo is Latin for inside and phyte means plant. The endophyte produces several alkaloids that allow the plant to survive drought, insects, and grazing pressure. However, one group of alkaloids, ergot alkaloids, impact livestock performance. Livestock that consume toxic, endophyte infected tall fescue experience decreased conception rates, milk production, and feed intake. This decrease in livestock performance can cost livestock producers thousands of dollars annually.

One management strategy is to select tall fescue cultivars that do not contain an endophyte, or endophyte free tall fescue. However, removing the endophyte also eliminates the plants ability to survive drought and insect pressure. The endophyte produces other alkaloids that allow the plant to survive in adverse conditions. Because of this, endophyte-free tall fescue varieties should not be planted south of the Missouri River.

A better option is to select tall fescue cultivars with non-toxic endophyte types. These cultivars of tall fescue are also called novel or friendly tall fescue. Non-toxic tall fescue contains endophyte strains that allow for stand persistence during drought and insects, but do not produce ergot alkaloids that result in reduced animal performance. Several cultivars are available today, these include: Jesup tall fescue with the endophyte MaxQ, Bar-Optima with E34, Texoma with MaxQII, Estancia with ArkShield, and Martin with Protek.

Animal performance on non-toxic fescue is better than that of toxic tall fescue. Average daily gain of steers grazing non-toxic tall fescue is an average of 0.5 lb per day more than animals on toxic Kentucky-31. Conception rates and animal intake are also higher than that of animals grazing toxic tall fescue.

Stand persistence can also be as good as Kentucky-31. The key to good stand persistence is to renovate the old Kentucky-31 stand properly. To do this, use the spray-smother-spray method. Spray with glyphosate, plant a smother crop, and then spray with glyphosate again before planting non-toxic tall fescue. In some situations, this process will need to be repeated to completely kill Kentucky-31 tall fescue. Once the new stand on non-toxic tall fescue has been established, producers will need to follow rotational grazing practices to maintain a vigorous stand.

For more information about nontoxic tall fescue, contact your local University of Missouri Extension office. Producers can also participate in a class to learn about fescue renovation. The last week of March the Alliance for Grassland Renewal will host a series of fescue renovation schools at University of Missouri Farms and Centers. The schools provide producers, veterinarians and industry professionals options for successfully converting Kentucky-31 tall fescue to novel endophyte varieties. Schools begin with understanding fescue toxicosis, then walk through the conversion process. Conversion topics include establishment practices, fertility needs, smother crops, weed control, stand maintenance, and variety selection. Schools provide hands on training for drill calibration in addition to pasture walks to observe different novel endophyte varieties.

Schools combine expertise from University of Missouri Extension, NRCS, agribusiness, and producers to give participants the opportunity to get answers to questions from a variety of perspectives and information sources. For further information visit http://grasslandrenewal.org/education.htm

Fetal Programming
Randy Wiedmeier

Some of you have probably heard of this new area of research as it relates to farm animal production. I guess I’m from the “old school” because I was taught that farm animal production is controlled by two factors: 1) the genetic code, and 2) environmental factors such as nutrition, climate, health, etc. I was also under the impression that the genetic code was “set in stone”. Apparently, it’s a little more complicated than that. Recent information indicates that gene expression of fetal calves can be manipulated by factors such as the nutritional status of the cow. Researchers at the University of Nebraska grazed a large group of dry, pregnant beef cows on native rangeland. Half of the cows received a small amount of supplemental protein (0.5 lbs./head/day). The other half of the cows received no such supplement. Protein supplementation did not seem to have any effects on cow or calf performance through the weaning phase. However, when heifer calves from this study were being developed as replacements, it was discovered that heifers from cows that received the protein supplement exhibited a pregnancy rate 13 percentage points higher than that of the heifers from cows that did not receive the supplement.

At South Dakota State University researchers fed a large group of dry, pregnant cows. Half of these cows received adequate nutrition throughout the entire gestation period. The other half of the cows received inadequate nutrition during the first and third trimesters but received adequate nutrition during the second trimester when most of the fetal calves’ muscle mass is developing. Nutrient restriction during the second trimester is quite common on many operations. No difference in cow or calf performance was measured through the calf weaning phase. However, when these calves were fed out in the feedlot, it was found that calves from cows that had nutrient restriction during the second trimester produced carcasses that were higher

University of Missouri System, Lincoln University, U.S. Department of Agriculture & Local University Extension Councils Cooperating
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with regard to USDA quality and yield grades compared to calves from the cows receiving adequate nutrition the entire gestation period.

Apparently, in some manner signals are being sent to the fetal calf throughout gestation that alter or “tweak” the DNA of the calf. Perhaps these signals are in some way helping prepare the calf for the environment into which it will be born. In the next issue I will present some data I generated on this subject regarding low-quality forage utilization in beef cattle.

State Law Requires Landowners to Plug Abandoned Wells

Bob Schultheis

The Missouri Department of Natural Resources (DNR) estimates there may be as many as one abandoned well or cistern for every 80 acres of land in the state. That translates to over 4,700 old wells or cisterns in most counties of southern Missouri. These old wells, which were once an asset, can become a serious liability.

There are two major hazards associated with abandoned wells and cisterns. The first hazard is of someone, or something, falling into a dug well or cistern, which typically are 3- to 6-feet in diameter and 10- to 30-feet deep. The other hazard is the potential for the old well or cistern to be a source of contamination for the underground aquifer and neighboring wells.

A well is considered abandoned when it can no longer be used or when it has not been in use for two years or more. It is the responsibility of the landowner to plug any abandoned wells on their property. State regulations allow landowners to plug wells on their property as long as they do so in accordance with the Missouri Well Construction Rules (http://www.sos.mo.gov/adrules/csr/current/10csr/10c23-3.pdf). Wells that are plugged improperly leave our aquifers (water-bearing rock formations) susceptible to contamination.

I’ve seen several situations where a new well tested bad for bacteria until the old well, several-hundred feet away, is plugged. Because of the fractured nature of Ozarks underground rocks, it’s possible to pollute another person’s water supply several miles away.

Plugging typically costs $300 to $1,200, depending upon the type and depth of the well and whether a contractor is involved. But this cost is very cheap compared to cost to the owner in cleaning up the underground aquifer if the owner pollutes it, and no monetary value can be placed on the loss of human life.

Abandoned dug-wells and cisterns can be plugged by pushing in the upper three feet of the well lining, and then filling the well to within three feet of the surface with chlorinated clean fill, such as coarse gravel, rock or varied-size agricultural lime or sand. The rest of the well should then be capped with clay-rich soil, mounded to allow for settling and to make sure surface-water drains away.

To plug a drilled bedrock well properly, you need to know the total depth, length of casing and depth to water in the well. The pump should be removed and the casing cut off three feet below the ground surface. Chlorinated clean gravel, or varied-size agricultural lime, is added from the bottom of the well to 50 feet below the bottom of the casing.

Either neat-cement grout (a mixture of six gallons of water per 94-pound bag of Portland cement), bentonite grout (a bentonite-water slurry), or chipped bentonite clay is then added to fill the hole to within two feet of the ground surface. Concrete is not acceptable grout. If the casing depth is unknown, the well must be plugged full length with approved grout.

The neat-cement or bentonite grout must be pumped to the bottom of the well, displacing any water out the top. The chipped bentonite clay, which swells when wet, can be slowly poured through standing water. The final two feet of the hole is then capped with clay-rich soil.

Missouri law (RSMo 256.600 to 256.640) requires that the plugging of abandoned wells be registered with the DNR within 60 days of the work being completed. If the record shows that the well was plugged properly, a registration number and letter will be sent to the landowner. It is important to keep this documentation, because some lending institutions and local governments require such proof upon sale or refinancing.

For more information on plugging wells, contact the Missouri Department of Natural Resources’ Wellhead Protection Section at 573-368-2165 or go on-line to http://dnr.mo.gov/geology/geosrv/wellhd/ and http://www.dnr.mo.gov/pubs/pub2281.pdf

Excellent resources for learning more about water protection in the Ozarks can be found online at http://extension.missouri.edu/webster/water.aspx and http://extension.missouri.edu/webster/water-quality.aspx

If you have questions on this topic or other engineering concerns, you can reach me at the Webster County Extension Center in Marshfield by phone at 417-859-2044, by email at schultheisr@missouri.edu, or go to our website at extension.missouri.edu/webster.

Upcoming Events

April 7—Advanced Grazing School, Mountain Grove

Several speakers from MU Extension and industry will present information on “Management in Good Times.” With high cattle prices and lower grain cost, management options can change during these situations. Specific information will include supplementation to add gain, when to cull and when to buy, and using contract grazing. To register contact Wright County Extension Office at 417-741-6134.

April 23—Beef and Forage Conference, West Plains

Have you ever wondered if some animals naturally perform better on Kentucky-31 compared to other ones? Dr. Rob Kallenbach will present current research findings involved with this topic, titled “Tolerance of cattle to tall fescue toxicosis: Is it real”.

Dr. Gene Stevens will also present information a research trial that was conducted on Ian Kurtz’s farm near Pomona. Information presented will explain building soil potassium and phosphorus levels in fescue hay fields.

The conference will be held at the West Plains Civic Center, Magnolia Room. Registration will start at 5:30 pm, with the meal and presentations to follow. Pre-paid registration is required with a fee of $15 per person. Registration includes meal and reference materials. To pre-register or for more information, please contact the Howell County Extension Center at 417-256-2391.