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Forage News

Plant and Soil Sciences

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## Forage News [2019-07]

Department of Plant and Soil Sciences, University of Kentucky

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# UK Forage News

Keeping Forage-Livestock producers in Kentucky informed  
Dr. S. Ray Smith and Krista Lea, MS.~ Editors

July 2019

## 2019 Heart of America Grazing Conference

### Kicking the Hay Habit: Optimizing Profitability

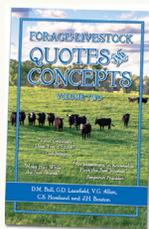


#### **Register for Heart of America and Western Kentucky Grazing Conferences today!**

The Heart of America Grazing Conference will be held on October 29th and 30th in Boone county and includes key note speaker Dr. Jim Gerrish. This year's theme is "Kicking the Hay Habit: Optimizing Profitability". On October 31st, Dr. Gerrish will travel to Hopkinsville for the Western Kentucky Grazing Conference. Registration is now open for both conferences, visit the UK forage extension website for more details. Sponsorship opportunities are also available.

#### **Quote of the Month: Brown Hay Can Be High-Quality Hay**

Hay buyers discriminate against brown or discolored hay even though it may have high feeding value. Sometimes hay harvested at early maturity has been discolored by rain or lying too long in the sun before baling. This hay may have higher nutritive value than late-cut stemmy hay that has a bright green color. The only way to determine the feeding value of hay is to conduct a forage analysis. Forage-Livestock Quotes and Concepts, vol. 2 is available online at [foragequotebook.com](http://foragequotebook.com).



#### **The Clover Dilemma**

Legumes such as clovers and alfalfa make immeasurable contributions to forage agriculture – yield, nutritional quality and improved animal gains. Astoundingly they do all these things while supplying themselves with nitrogen converted ('fixed') from the air via their root nodules.

Managing grass-legume stands over time presents farmers with tough questions, such as 'do I have enough clover to withhold nitrogen?' Another common question is

whether to control broadleaf weeds when doing so will likely take out the clover. University experts commonly recommend withholding N-fertilizer from mixed stands when legumes make up 25% of the stand. I have said it myself. But it is not much of an answer, and this has bothered me for years.

Here are some important findings from the PhD of Dr. Chuck West:

- Legumes do fix large amounts of N, but the highest numbers are from grass-white clover stands in temperate regions with long growing seasons and near ideal growing conditions.
- The amount of N fixed per season shared directly with companion grasses is between 20 to 50 lb/N/A/year, a fraction of total N fixed.
- White clover turns over more N during the growing season because it sloughs root nodules every time it is defoliated. Nodule sloughing is the main way fixed legume N is released directly to the organic soil N pool. This pool is converted to nitrate-N which can be used by the companion grass. In contrast, alfalfa does not slough nodules after harvest. In fact, alfalfa only sloughs its nodules at the end of the growing season.
- The N benefit to the companion grass is more closely related to legume growth and yield in the previous rather than current year (read this again, I had to).

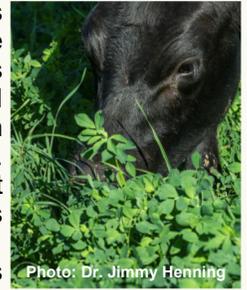


Photo: Dr. Jimmy Henning

#### **Forage Timely Tips: July**

- ✓ Continue grazing available summer annuals (millets, sorghum/Sudangrass, crabgrass, etc.).
- ✓ Apply 40-60 lb N/A to stimulate summer annual regrowth.
- ✓ Clip pastures late June/early July as needed to maintain vegetative growth and to reduce weed seeds, but don't clip lower than 4".
- ✓ Identify fescue pastures for stockpiling. Choose pastures that are well drained, have a strong sod, and have not been overgrazed.
- ✓ Soil test pastures to determine fertility needs.
- ✓ Using UK variety trial results, select varieties to plant in the fall and order seed.
- ✓ Use a designated sacrifice lot to feed livestock hay and supplements as needed if drought sets in and no forage is available for grazing.

- Adding N to mixed stands increases yield by increasing the yield of the grass (in other words, the grass is not getting enough N in mixed stands).

Fixed N absorbed by the grass increases as legume yield per acre increases AND as stands get older. This yield increase in the grass is due to the buildup of the soil N from the sloughing of N-fixing nodules and legume residue decomposition over multiple years (and from the manure and urine of cattle grazing legumes in pastures).

Another, somewhat controversial 'so what' - Grasses in mixed stands are going to be N-limited, guaranteed. Therefore, nitrogen application to mixed stands can be justified (from increased grass yield), even those with good legume content.

Don't confuse this with N application in the establishment year for clover. Nitrogen should not be applied while clover is trying to become established in existing grass.

What about weeds? Still a tough question. But the downside of clover loss when broadleaf herbicides are used is mitigated by the release of N from the killed legume. The companion grass gets the double benefit of weed removal and a burst of N.

Focusing solely on modest rates of N transfer directly from legume to grass is missing the point, especially in pastures. Most (90% plus) of the nitrogen consumed by the grazing animal is returned in manure and urine.

So legumes are still good and desirable and vital in forage systems, even if they do present some management dilemmas. Producing economic yields in mixed stands means keeping legumes present in high quantities (even 30 to 50%) by weight, year after year. ~ Dr. Jimmy Henning, excerpt from Farmers Pride article, June 20, 2019.

### Improve Summer Pastures with Crabgrass

After being brought to the forefront by studies done at the Noble Research Institute (Ardmore, Okla.), crabgrass began gaining favor as a high-quality forage alternative. Many farmers are now considering it for improving summer pastures.

John Jennings, an extension forage specialist with the University of Arkansas (UA), notes crabgrass is a warm-season annual and, depending on rainfall, produces 2 to 5 tons of dry matter per acre. Crabgrass hay is typically better quality than other summer annuals such as bermudagrass and pearl millet, and an Arkansas study showed common crabgrass retains its quality even as the plant continues to mature.

Jennings also suggests using nitrogen fertilization when needed. Apply it in two applications of 50 to 60 pounds per acre.

Crabgrass works well as a forage before fall planted small grains such as cereal rye and wheat. The small grains provide forage for late fall into spring, and the crabgrass fills in during the summer and early fall to provide high-quality forage.

Jennings recommends light tillage when the cereal forage is done being grazed on in the spring. This improves seed germination and promotes better volunteer crabgrass stands for the summer.

Crabgrass responds well to rotational grazing. Begin grazing when it is 4 to 6 inches tall, which typically occurs 40 days after seedling

emergence. According to Jennings, crabgrass is palatable and animals in a new pasture tend to graze on it first. However, Jennings notes, "Crabgrass becomes very unpalatable after a killing frost and is usually avoided by animals grazing. Plan to use grazeable forage before frost occurs."

Jennings recommends cutting crabgrass for hay in the boot to heading stage (normally 18 to 24 inches high), which will allow for at least two harvests per year. Regrowth is supported by remaining leaves and not by stored root and crown reserves, so avoid cutting crabgrass lower than 3 inches. ~ Michaela King, Hay and Forage Grower

### Fall Grazing School Registration Now Open

The Fall Kentucky Grazing School will be held at the Woodford County Extension Office and the C. Oran Little Research Center in Versailles, KY on September 10-11, 2019. The highlight of the Grazing School is always the hands-on components including: setting up temporary fence and water systems, determining stocking rate, measuring forage, forage ID and more. Registration is only \$50 and includes educational materials, transportation to and from the research farm and lunches. Space is still available, register online or download the form from the UK Forage website and mail a check.

### Buttercup in Horse Pastures



Photo: Dr. Jimmy Henning

The UK Forage Specialists have had several calls on the safety of yellow buttercup in KY pastures and asked Dr. Megan Romano to comment on the potential risks to horses.

According to the current USDA PLANTS database, nearly 30 different species of *Ranunculus*, or buttercups, are found in Kentucky. Leaves, flowers, and stems of *Ranunculus* have a sharp, pungent taste and the plants are generally avoided by grazing livestock.

*Continued on page 3.*

### Upcoming Events (see website for details and online registration)

- AUG 6 - KFGC Field Day, Ohio County, KY
- SEPT 5 - Equine Field Day, Princeton, KY
- SEPT 10-11 - Fall Grazing School, Versailles, KY
- SEPT 26 - Beef Bash, Versailles, KY
- OCT 29-30 - Heart of America Graz. Con., Covington, KY
- OCT 31 - Western KY Grazing Conf., Hopkinsville, KY
- JAN 5-8 - AFGC Annual Conference, Greenville, SC

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see blue.

*More content on page 3!*

*From Buttercup in Horse Pastures (pg. 2)*

Some *Ranunculus* species contain ranunculin, a compound hydrolyzed to protoanemonin when the plants are damaged – for example, when they are chewed. Protoanemonin is a vesicant, causing blistering of the skin, mouth, and digestive system. Those *Ranunculus* species with the highest ranunculin concentrations are the most toxic. Damage to the plant cells also occurs when buttercups are cut and dried in hay. Hydrolysis of ranunculin to protoanemonin likely occurs as the plants dry. Protoanemonin then forms anemonin, which is not a vesicant. Dried *Ranunculus* plants are therefore expected to lose toxic potential fairly rapidly, although specific research has not been published to confirm this. The risk posed by **Ranunculus** species in Kentucky is minimal if there are plenty of other forages present – animals avoid grazing the unpalatable fresh plants, and the dried plants appear to be much less toxic.

Buttercups can cause mouth pain and blisters, drooling, oral and gastric ulcers, colic, and diarrhea. Horses are probably the most sensitive species to the gastrointestinal effects of *Ranunculus* species. These effects can be severe if buttercups are ingested in large quantities, but their acrid taste usually deters further grazing. Clinical signs are typically seen only in animals forced to consume buttercups when they have nothing else to eat.

A few anecdotal reports have suggested an association between the presence of *Ranunculus* species in the pastures and abortions in cattle and horses; these reports are unconfirmed, and attempts to reproduce the disease have been unsuccessful. Bur buttercup (*Ceratocephalus testiculatus*) can cause significant illness but this plant occurs primarily in the Western U.S. and is not a true buttercup, as it belongs to a different genus.

A review of UKVDL records over the last 13 years found no cases of livestock deaths attributable to *Ranunculus*. It is possible, however, that cases of colic or diarrhea have unknowingly been caused by ingestion of *Ranunculus* species and were never attributed to the plant. Buttercup toxicosis poses the greatest risk to starving animals with nothing else to eat; it can be easily prevented by providing animals with adequate forage. Because animals avoid grazing *Ranunculus*, it proliferates in overgrazed pastures. Overgrazing can be prevented by maintaining appropriate stocking rates.

According to UK publication “Broadleaf Weeds of KY Pastures, AGR-207” Late February or March is the time of the year to spray for buttercup control. Maintaining good grass cover prevents many weeds including buttercup from germinating in fall or winter. Resting pastures and not overgrazing are key to improving pasture health. Thin stands with bare areas or that contain summer annual grasses like crabgrass can be overseeded with a pasture mix in September. Be sure to soil test every 2-3 years and apply amendments based on soil test recommendations. In most horse pastures, nitrogen is most beneficial in the fall to improve root density and thicken stands. For more information, check out our publications Establishing Horse Pastures or Soil Sampling and Nutrient Management of Horse Pastures. Additional information on buttercup in pastures and control methods can be found in an article published in Forage News (Jan. 2018). ~ Dr. Ray Smith, Dr. Megan Romano and Krista Lea

### **Clip Pastures to Reduce the Risk of Ergot**

The UK Horse Pasture Evaluation program has observed ergot bodies in headed out tall fescue pastures and hay fields in the last two weeks on several central KY farms.

*Claviceps* fungal spores are found in the soil of much of the US and can infect the seeds of many grasses, particularly when there is frequent and heavy rainfall during seedhead development. This infection results in the growth of sclerotia (also called ergot bodies) instead of a healthy seed and look similar to mouse droppings. The sclerotia contain concentrated levels of many ergot alkaloids, a number of which are similar to the major toxin found in endophyte-infected tall fescue and cause symptoms similar to fescue toxicosis in all livestock. Since ergot bodies are not associated with the endophyte found in infected fescue, they can also be found in endophyte free and novel endophyte tall fescue varieties.

To reduce the risk of ergot poisoning by grazing animals, keep pastures clipped to remove seedheads. Check tall fescue hay and bedding for presence of ergot bodies. Because of the raking and baling process, ergot bodies in hay or bedding are rare, but can occur. ~ Dr. Cynthia Gaskill, Dr. Ray Smith and Krista Lea.



Photo: Dr. Jimmy Henning