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UK Forage News

Keeping Forage-Livestock Producers in Kentucky Informed

Dr. Ray Smith and Krista Lea, editors

June 2021

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Say Hello to a typical Southeast hay producer

Hay harvesting and feeding strategies are as variable as the weather that often dictates them. During the past year, forage specialists in 14 Southeastern states conducted two surveys to quantify how hay producers operate and determine the frequency of various hay enterprise practices, both good and bad.

At the recent virtual Southern Pasture & Forage Crop Improvement Conference, the initial results of the survey were presented by John Jennings, an extension forage specialist with the University of Arkansas.

The hay harvest and hay feeding surveys were offered independently and netted 2,158 and 1,467 responses, respectively. Most respondents in both surveys were over 50 years old, and the majority of that group were over 60 years of age.

Over 50% of respondents in both surveys were part-time cow-calf producers with an off-farm job.

To summarize the survey results, Jennings offered this characterization of the average hay-feeding farmer in the Southeast:

- Over 60 years old
- Part-time cow-calf producer with 77 head
- Produces his own hay
- Feeds 4x5 round bales of fescue or mixed grass
- Feeds one hour per day, every day, from November 15 to April 1
- Stores hay in the barn and feeds in rings
- Hay is worth \$35 per bale
- Feeds supplement but doesn't test hay for quality

Read more about the survey results in Hay and Forage Grower, May 2021. ~ Mike Rankin

Pub of the Month: Fescue Toxicosis - What It Is and How It Costs You, USDA-NRCS and Virginia Tech

This one page publication gives a quick overview of tall fescue, the fungal endophyte and how their interaction negatively affects livestock and on farm profitability. This publication was produced by researchers at Virginia Tech as part of a Conservation Innovation Grant with USDA-NRCS. Other fact sheets produced include Managing Novel Tall Fescue for Persistence, Sampling Tall Fescue for Endophytes and

Alkaloids, Strategies to Mitigate Tall Fescue Toxicosis, and Converting from Wildtype to Novel Tall Fescue. Download any of these publications at <https://GrasslandRenewal.org/resources>.

Red Clover, Red Clover – Send Your Isoflavones Right Over

Thanks to major clover-centric breakthroughs by the Agricultural Research Service's (ARS) Forage-Animal Production Research Unit, we've found yet another reason to love clover this March.

While the four-leaf clover is a celebrated good luck charm in folk tradition, members of the genus *Trifolium* have long been a 'holy grail' for agronomists and farmers too. As natural nitrogen fixers, clovers help instill nitrogen in soil and lessen our reliance on chemical fertilizers to keep fields productive. Additionally, common species like red or white clover happen to be extremely palatable and can provide high quality protein to cattle at a low cost.

According to ARS microbiologist Michael Flythe, who worked with ARS plant physiologist Isabelle Kagan and ARS animal scientist Brittany Harlow to investigate potential plant-based antimicrobials, clovers are also an ideal alternative to synthetic bactericides used in cattle feed. They discovered that clover could effectively reduce hyper-ammonia-producing bacteria that live in cattle rumen (the first chamber of a ruminant animal's digestive tract).

"Hyper-ammonia-producing bacteria decrease the amount of dietary protein that an animal can absorb through digestion," said Flythe. "Decreased dietary protein causes loss in cattle growth and overall

Forage Timely Tips: June

- ✓ Continue hay harvests. Minimize storage losses by storing hay under cover.
- ✓ Clip pastures for weeds and seedheads as needed.
- ✓ Slow rotation allowing for a longer recovery period.
- ✓ Use portable fencing to decrease paddock size and increase paddock number.
- ✓ Do NOT graze below the 3-4 inches.
- ✓ When present, johnsongrass can provide high quality summer forage when managed.
- ✓ Crabgrass, a warm-season annual grass, can provide high quality summer grazing. If crabgrass is desired, remember it needs some annual soil disturbance to keep coming back.
- ✓ Begin grazing native warm-season grasses. Start at 18-20" and stop at 8-10 inches.

performance. When you add clover to cattle diets, special compounds in clover called isoflavones actually improve the quality and quantity of protein available to the animals.”

The magic of clover isoflavones, which are similar to estrogen in structure, doesn't stop there; they also give cattle an additional defense against dangers like fescue toxicosis. Caused by the consumption of common endophyte infected tall fescue, a hardy grass, fescue toxicosis is a condition that results in tightened blood vessels, fertility problems, weight loss, and lowered milk production in livestock animals. It is estimated that fescue toxicosis costs the U.S. livestock industry \$2 billion annually.

“One of the reasons that common tall fescue is so abundant and resilient is actually because it contains a natural chemical defense against herbivores, which acts as a toxin when ingested,” Flythe explained. “After it builds up in the cattle, the animals become ill because their blood vessels have constricted, impeding blood flow. But when cattle consume tall fescue with clover, the isoflavones open up their blood vessels and improve blood flow.

While the cattle may be thankful for their lucky clovers, research indicates that isoflavones in clover can dilate arteries and promote healthy blood flow in humans as well. Clovers and their extracts have been used to treat migraines, increasing their potential as a natural remedy for other vasoconstrictive conditions. – by Georgia Jiang, ARS Office of Communications

Reasons to Cut Hay Early

Most of our Kentucky hay comes from first cuttings of cool season grasses. This hay is often harvested late, sometimes very late, for a variety of reasons. Weather can derail the best of hay plans, but cutting on time remains the biggest way to improve forage quality. The point of this article is not to simply restate what most of you already know about the optimum stage to cut hay. The point is simply this - cut earlier than last year. Here are six reasons to cut hay early.

These reasons are based on a Tennessee study comparing three fescue hays cut May 3, May 14 and May 25. These dates corresponded to late boot/early head, early bloom, and early milk stage/seed forming, respectively. These hays were then fed to 500 lb. holstein heifers.

- 1) Intake is greater. The heifers ate more of the early cut hay, 13 lb/day compared to 11.7 and 8.6 for later cut hays.
- 2) Early cut hay had the highest digestibility and crude protein.
- 3) Performance is greater. Gain per day ranged from 1.39 to 0.42 lb/day for the three hays. The earliest cut hay supported the best gains.
- 4) Small differences in digestibility have large improvements in animal gains. Maturity decreased gains per day much more than forage digestibility. A delay in cutting of twenty two days dropped digestibility by 17% (68 to 56%) but lowered daily gain dropped by 70% (1.39 to 0.42 lb/day).
- 5) Cutting on time sets up a second cutting opportunity. Hopefully this will come during better weather in June or early July.

- 6) Gain comes faster on early cut hay. If you calculate how long it would take to equal gains on each hay, you arrive at 95, 140 and 298 days respectively. Hay cut on May 25 could produce the same gain as hay cut on May 3 but it would take *twice* as much hay and *three* times as long!

Cutting hay early pays, especially for growing cattle. And small differences in maturity can make big differences in gain and your bottom line. But don't worry about being perfect, just cut earlier than last year. ~ Dr. Jimmy Henning for Farmer's Pride

Additional USDA Pandemic Assistance Available to Alfalfa Farmers

Alfalfa now qualifies for an additional payment of \$20/acre. Deadline to apply is roughly June 5th. Find more details at farmers.gov/cfap.

Research Highlight from USDA-ARS Lexington

Recent research has found that isoflavones, present in red clover, may be responsible for reducing the effects of fescue toxicosis. Isoflavones act as on receptors present on blood vessels to promote vasodilation and improve blood flow, reversing the effects of ergot alkaloid induced vasoconstriction. The objective of this research was to evaluate the effect of isoflavone supplementation with tall fescue seed consumption on beef steer's rumen and serum metabolomes (the mixture of chemicals present in the blood or digestive system). Seed was used because it contains high levels of ergot alkaloids like ergovaline, the main toxin in tall fescue. The rumen metabolome was largely impacted by endophyte infected seed, while the serum metabolome was influenced by isoflavone supplementation. In the rumen, the impact of the infected seed involved carbohydrate and nucleic acids metabolism. In the serum, differences in global metabolomes and individual metabolites involved in urea cycling and amino acid metabolic pathways were identified in animals receiving isoflavones and those who did not. This work supports the idea that dietary inclusion of isoflavones reduce the harmful effects of tall fescue toxicosis. In short, the effect of tall fescue on livestock is complicated, but the beneficial compounds in red clover have broad ranging beneficial effects.

From the Research Article: “Rumen and serum metabolomes in response to endophyte-infected tall fescue seed and isoflavone supplementation in beef steers” ~ Taylor Ault-Seay et al.

Upcoming Events (see Forage website for details and to register, click on EVENTS)

June 4—Southern Indiana Grazing School
June 11—Northern Indiana Grazing School
June 19—Managed Grazing Field Day, TN
Sept 21-22 —Fall Grazing School
Oct 26—KY Grazing Conf., Princeton
Oct 27—KY Grazing Conf., Elizabethtown
Oct 28—KY Grazing Conf., Winchester
Feb 24—Kentucky Alfalfa and Stored Forage Conference, Bowling Green

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