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Forage News [2018-10]

University of Kentucky Department of Plant and Soil Sciences

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Forage News

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

October 2018

Profitability focus of Kentucky Grazing Conference

The 2018 Kentucky Grazing Conference will help producers learn how to use forages to increase their farm's bottom line.

"The conference is focused on turning grass into cash," said Jimmy Henning, forage extension specialist in the University of Kentucky College of Agriculture, Food and Environment and conference organizer. "The program features speakers who have done this across a range of enterprises including dairy, small ruminants and beef. In addition, the program will help producers better understand how to manage risk in grazing-based livestock enterprises."

Hosted by UK Cooperative Extension Service and the Kentucky Forage and Grassland Council, the conference will occur at two regional locations to accommodate the state's producers. For Western Kentucky producers, the conference is Oct. 30 at the Christian County Extension office. Eastern Kentucky producers may attend the Nov. 1 conference at the Clark County Extension office. At both locations, the program will run from 7:45 a.m. until 3:30 p.m. local time.

Among the featured speakers is Howard Straub III. Straub is the manager of the Pasture Dairy Center at Michigan State University's Kellogg Biological Station. The center has 240 acres dedicated to grazing research and a milking herd of about 130 U.S. Holstein and 25 New Zealand Friesian cows. Straub will discuss the center's research on rotational grazing of perennial pastures and ways producers can incorporate alternative and complementary forages into the grazing season.

Forage Timely Tips: October

- ✓ Apply phosphate, potash and lime according to soil test recommendations.
- ✓ Do not harvest or graze alfalfa fields to replenish root reserves.
- ✓ Graze crop residues (be aware of grazing restrictions on certain crop herbicides).
- ✓ Beware of prussic acid (cyanide) poisoning from grazing summer annual grasses immediately following frost.
- ✓ Start inventory of hay supplies and livestock needs and test hay quality.
- ✓ Consider broadleaf weed control in grass pastures.

Each location will also have a local producer who will discuss how forages contribute to the profitability of their operation.

In Eastern Kentucky, the speaker will be Todd Clark of Lexington. Clark is a first-generation farmer who raises a variety of products for both commodity and local food markets on 800 acres. His operation includes broilers, layers, turkeys, grass-finished beef and lamb and vegetables.

In Western Kentucky, Michael Palmer will speak. Palmer operates a farm south of Murray and produces grass-finished beef, pork and chicken without added hormones or antibiotics.

Early registration for the conference is \$35 per person or \$50 if also renewing KFGC membership. The early registration deadline is Oct. 22. Producers can register and view the agenda for the conference on the UK forages extension website at <https://forages.ca.uky.edu/>. ~ Katie Pratt, UK Ag. Communications

Featured Publication: Taking Soil Test Samples (AGR-16)

The most important part of making fertilizer recommendations is collecting a good, representative soil sample. Soil test results and fertilizer recommendations are based solely on the few ounces of soil submitted to the laboratory for analysis. These few ounces can represent several million pounds of soil in the field. If this sample does not reflect actual soil conditions, the results can be misleading and lead to costly over- or under-fertilization. It is necessary to make sure that the soil sample sent to the laboratory accurately represents the area sampled. Find this and other publications at your local county extension office or our website, www.forages.ca.uky.edu.

Is Bale Grazing a Solution for Last Year's Mud?

Winter feeding areas for beef cattle were quagmires of mud that I cannot get out of my head. These muddy areas turned into this year's crabgrass-ragweed pastures. Are we destined to repeat this scenario? If nothing changes, probably so.

Bale grazing may be a practice worth considering to help address the issues of mud. Depending on your conditions, it might even save money in the process.

Bale grazing is the practice of putting out bales in the fall for feeding later on in the winter. These bales are spaced so they can be allocated using temporary electric fencing and portable hay rings. This practice has been used for years in areas further north.

The advantages of bale grazing include less traffic

damage due to moving hay across saturated access points, spacing out the hoof damage across a greater area, improving soil fertility and organic matter, reducing mud and lessening runoff of nutrients into streams and ponds. The negatives include the potential of having to reseed larger areas of ground and the need for large areas of upland well drained soils to feed on.

Fred Thomas in Adair County has been using bale grazing for a few years. He has seen an improvement in soil fertility from bale grazing and spends a lot less time on a tractor in the bitter weather of winter. In fact, Fred knows that he saves \$30 per month by not having to keep his tractor block heater on during the winter.

Fred Thomas placed bales 50 feet apart the first year, and needed to reseed the area completely. He used this as an opportunity to reseed novel endophyte tall fescue the following fall after growing a crop of sudangrass and sorghum-sudangrass. No additional fertility was needed for the summer grazing due to the nutrients left behind from bale grazing. Thomas is planning for more space between bales (150 feet) this winter to lessen the forage damage.

Before and after soil tests showed Thomas improved both his P and K status of the areas where he bale grazed, especially the K. Roy figures that Thomas saved at least \$20 per acre in fertilizer costs due to one winter of bale grazing.

Here are some tips for bale grazing:

- Locate bales on well drained soils
- Keep bales away from surface water and creeks
- Allocate about 1 bale per 10 cows per feeding so each has room to eat
- Limit bale feeding time to about 3 days per spot



Setting out bales now for winter feeding is a technique known as bale grazing. Fred Thomas has been using bale grazing on his Adair County farm, shown in this aerial photograph. Bale grazing can reduce mud, save time and even improve soil fertility. Although not perfect, it may be a way to reduce last year's winter mud.

Bale grazing might not be right for you, but it is an intriguing option. Happy foraging. ~ Dr. Jimmy Henning, Farmer's Pride Sept.

Quote of the Month: "Pastures are Tattletales"

Much can be learned about the management history of a pasture just by carefully observing what is growing there. Certain forage crops and weeds are favored or discriminated against by various management practices. Most forage crops require higher levels of soil fertility and soil pH than most weedy species. Obviously, pasture herbicides can be used to kill weeds in many situations. Also, because plants vary greatly

with regard to grazing tolerance, grazing management is a powerful tool that can be used to favor increased stands of desirable species. Decisions regarding these issues have a profound effect on the species composition of pastures. Consequently, a question that a forage-livestock producer might do well to periodically consider is, "What stories do my pastures tell?" To purchase a Livestock Quotes and Concepts Book, contact us at ukforageextension@uky.edu.

UK's Fragipan Field Day to highlight research breakthrough

Princeton, Ky., - University of Kentucky soil scientists will host a Fragipan Field Day to present a significant research breakthrough in crop production. The field day is from 8 a.m. until noon CDT Oct. 3 at the UK Research and Education Center's Farm in Princeton.

The UK College of Agriculture, Food and Environment research team led by soil scientist Lloyd Murdock has discovered that annual ryegrass will successfully break down soil fragipan over time. Fragipan is a hard, impervious layer found in some soils. It creates shallow soils with limited yield potential due to low water-holding capacity. The soils tend to dry out during the summer and have too much water in the winter.

Soil fragipans exist in 50 million acres across the United States including 2.7 million acres in Kentucky.

"After 45 years of working with these subpar soils, it's exciting to know we can improve them," Murdock said. "I'm really proud of this research project and excited to be a part of it." The group, which also includes UK soil scientists John Grove, Tasios Karathanasis and Chris Matocha, has worked toward a solution for the past five years.

During the field day, UK soil scientists will discuss their laboratory and field discoveries. Participants will also get to hear from Ralph "Junior" Upton, an Illinois farmer who has used annual ryegrass on fragipan soils on his farm for 17 years. UK and conservation specialists will also discuss the economics of breaking down the fragipan, rooting patterns and growth of annual ryegrass, and annual ryegrass' potential as a cover crop or forage. Certified Crop Advisers can receive continuing education units for this field day including two in soil and water, one in crop management and 0.5 in pest management.

The UK Research and Education Center is located at 1205 Hopkinsville Street in Princeton. Signs to the field day location will be posted at the entrance to the farm.

For additional information, contact Dottie Call at 270-365-7541, ext. 234 or dcall@uky.edu. ~ Katie Pratt

Upcoming Events (see website for details and online registration)

OCT 30 - KY Grazing Conf. West, Hopkinsville, KY
NOV 1 - KY Grazing Conf. East, Winchester, KY
DEC 4 - KFB Forage and Beef Sessions, Louisville
JAN 6-8 - AFGC Conference, St. Louis, MO
JAN 22-23 - Heart of America Grazing Conf., Indiana
FEB 21 - KY Alfalfa and Stored Forage Conf., Lexington
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Additional content on pages 3 and 4:

Be Aware of Poison Hemlock and Is The Alfalfa Stand Worth Keeping?

see blue.

Be Aware of Poison Hemlock

Poison hemlock is toxic to a wide variety of animals including man, birds, wildlife, cattle, sheep, goats, pigs and horses. People are usually poisoned when they mistakenly eat hemlock for plants such as parsley, wild carrot or wild anise. The first notable example of human poisoning was the death of Socrates in 399 B.C. when he ingested a tea made from poison hemlock containing the toxic piperidine alkaloids coniine and gamma coniceine. Cattle seldom eat hemlock but they will if no other forage is available or it is incorporated in hay or silage. A question commonly asked is how much do cattle need to eat to kill them. Unfortunately, the answer is not clear cut. There is considerable variation in the toxic alkaloid content of the plant depending on stage of growth, season, moisture, temperature, time of day, and geographical region (southern plants are more toxic than northern plants). The conium alkaloids have two major effects: 1) rapid, sometimes fatal effects on the nervous system and 2) they are teratogenic agents (causing birth defects in calves and pigs). Cattle have died by eating as little as 0.2-0.5% of their body weight in green hemlock. Poison hemlock is teratogenic if it is eaten by a cow in the first trimester of pregnancy.

During the past months the evidence of poison hemlock (*Conium maculatum*) is widespread. Although this plant is often seen along roadways, abandoned lots, fencerows, and other non-cropland sites, in more recent years, it has expanded out into grazed pasture lands and hay fields. Poison hemlock is classified as a biennial that reproduces only by seed. It is capable, however, of completing its lifecycle as a winter annual in Kentucky if it germinates during the fall months. Flowers and new seed are typically produced in late May and June. Plants emerge as a cluster of leaves that form a rosette. Poison hemlock is most noticeable at this stage of growth in late fall through early spring with its parsley-like leaves which are highly dissected or fern-like (Figure 1). The individual leaves are shiny green and triangular in appearance.

As the plant begins to send up flower stalks, the leaves are alternately arranged on the main stem. Each individual leaf is pinnately compound with several pairs of leaflets that appear along opposite sides of the main petiole. As the plant matures, poison hemlock can grow upwards to about 6 to 8 feet tall (Figure 2). At maturity the plant is erect, often with multi-branched stems, and forming a deep taproot. Poison hemlock has hollow stems which are smooth with purple spots randomly seen along the lower stem that help distinguish it from other plants similar in appearance. The flowers, when mature, are white and form a series of compound umbels (an umbrella-shaped cluster of small flowers) at the end of each terminal stalk. Although poison hemlock is often associated with areas that have moist soil conditions, it can also survive in dry sites.

All classes of livestock are known to be affected by poison hemlock. Cattle, horses, and goats are considered to be the most susceptible domestic animals although other animals can be affected as well. Symptoms of poisoning can occur rapidly anywhere within 30 minutes to 2 hours depending on the animal, quantity consumed, and other ecologic factors. Toxicity varies depending on stage of plant growth, location and environment. Poison hemlock foliage has an unpleasant mouse urine-like odor, detectable when near the plant or when a stem or leaf is crushed. Livestock generally avoid it unless forage is scarce but it may be accidentally consumed as a contaminant of hay or silage. Poison hemlock contains 8 piperidine alkaloids; the two major ones are coniine (major alkaloid in the seed) and gamma-coniceine (predominate in green, vegetative growth). These alkaloids cause paralysis of the muscles by acting as a neuromuscular blocking agent. Signs of acute poisoning include:

- Nervousness, trembling, muscle weakness, incoordination
- Salivation (slobbering)
- Initial stimulation or excitement followed by depression
- Dilation of the pupils
- Weak heartbeat
- Musty, mousy odor to breath and in the urine
- Prolapse of the third eyelid across the cornea may cause temporary blindness
- Death by respiratory failure due to paralysis of respiratory muscles

Although acute disease is a primary concern, an equally serious problem is subacute intoxication of pregnant livestock that causes deformed bones and joints in calves and pigs. The plants must be eaten for an extended period of time during the first trimester of pregnancy. The susceptible stage of gestation for maternal exposure for cattle is from 50 -75 days for skeletal defects to occur. These alkaloids continuously reduce fetal movement during tissue formation, resulting in crooked legs, deformed necks and spines. Less commonly, cleft palate results from lack of fetal movement in the head and neck regions at 30-50 days gestation, resulting in the tongue preventing normal palate closure during embryo development.

Public health is a concern when dealing with poisoned animals because of the possibility of alkaloid residues in meat. Elimination of plant toxicants through the milk is a minor route of excretion but may be important when consumed by a calf or a human.

The principle strategy for poison hemlock control is to prevent seed production which can be a challenge since a fully mature plant is capable of producing 35,000 – 40,000 new seeds. It is too late to utilize herbicide control methods after plants have produced flowers. Therefore, mechanical control efforts (if feasible) such as mowing or cutting down individual plants should be initiated just before peak flower production to avoid or reduce the amount of new seed being produced. Make note of areas heavily infested with poison hemlock (Figure 3) and begin to look for emergence of new plants in the fall. **During the late fall (November) or early spring (March) is the best time of year for herbicide treatment.** In grass pastures and hayfields herbicide products containing 2,4-D can be effective when applied to young, actively growing plants that are in the rosette stage of growth. Spot treatments with products containing 2,4-D, triclopyr, or glyphosate can also be used depending on the location. ~ Drs. Michelle Arnold and J.D. Green

Is the Alfalfa Stand Worth Keeping?

Now, before the ground freezes and snow accumulates, is a good time to walk alfalfa fields and decide whether they are good enough to keep, need some remedial action, or should be replaced. Both new (2018) seedings and established stands should be evaluated.

Evaluating 2018 Seedings

Farmers are generally seeding 60-120 seeds/ft². Of the seed planted, 50 or more seedlings/ft² usually emerge and then the stand thins to 25-35 seedlings/ft² by fall, regardless of seeding rate. The number of alfalfa plants/ft² normally will decline to about 20 seedlings/ft² after the first winter and continue to gradually thin over the life of the stand (as individual plants get bigger).

Less-than-optimum stands, with as few as 15 plants/ft² this fall from a spring seeding, will still provide good yield for next year under most circumstances. These plants will likely have 3-4 or more stems per plant and be above the 55 stems/ft² required to maximize yield (Fig 1). The stand will need to be evaluated for stems/ft² in the future to determine if stand density is adequate for optimum yield. With less than 15 plants/ft², the stand will likely be low-yielding and weedy next year.

Before any remedial action is taken, I recommend trying to determine why the stand is less than desired. Some stands are poor due to weather conditions beyond our control. But before blaming the weather consider the following:

- Was the soil pH 6.4 to 6.8? Soil pH below 6 may inhibit germination and growth.
- Was P and K at recommended levels?
- Was the soil firm at seeding and was it packed around the seed? Seed planted in loose soil is unable to absorb sufficient soil moisture for germination.
- Did the seed get placed at the proper depth? Alfalfa seed needs to be at ¼-½" depth; deeper seed will have reduced emergence.

These factors, coupled with less-than-optimum weather for establishment, are the most common causes of alfalfa stand failure. Alfalfa is more difficult to establish than corn or soybeans, and the equipment needs to be at least as good to get an acceptable stand.

If none of the above factors apply, we have seen other causes of stand failure over the last couple years:

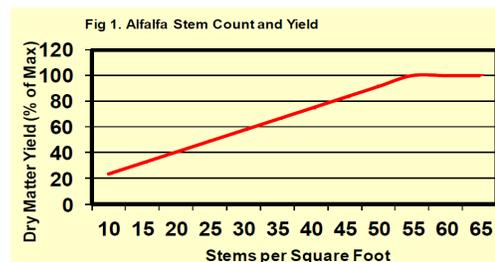
- Was there herbicide residue? Note that some corn, soybean, and wheat herbicides have a 12- to 24-month waiting period after application before it is recommended to seed alfalfa.
- Was soil fertility adequate? In addition to phosphorus, potassium, and boron, some soils may need sulfur for adequate crop growth (due to reduced acid rain).
- Did the alfalfa variety have good aphanomyces race III resistance? Much of the country now has aphanomyces race III in the soil and lack of resistance can result in poor establishment.
- Was the cover crop removed quickly enough? Wet weather kept some farmers from harvesting oats. Then slugs, potato leaf hoppers, and other insects came in to damage the alfalfa seedlings. One potential solution is to seed oats with the alfalfa for erosion and weed control, then spray with a grass herbicide or Roundup (if a Roundup-resistant variety of alfalfa was planted) when the oats are 4-6" tall.

After determining if any of the above factors contributed to the poor stand, remedial action can be considered. While alfalfa can theoretically be interseeded into alfalfa six months or less after the initial seeding, it seldom provides good results. Reseeded stands often still have variable stand density. If you want a good alfalfa stand, I recommend fixing any of the above problems, if possible, and then disking and reseeding the field.

Another choice is to seed a grass into the thin alfalfa stand. Ryegrass or festalolium can be interseeded for short-term (one-year) benefit next spring. Tall fescue or orchardgrass can be interseeded either this fall or next spring if the stand is to be kept for two or more years. Always be sure to choose grass varieties carefully for yield, rust resistance, medium to late maturity, and winter hardiness.

Evaluating Established Alfalfa Stands

Early September, shortly after cutting, is a good time to evaluate stand density to make plans for next year. Simply count the cut stems per square foot and use Figure 1 to determine yield potential. Thin stands will have reduced yield next year equal to or less than that indicated in Figure 1.



As a second step, dig a few plants to examine the top 6" of taproot. Split the taproot vertically and examine for discoloration or rot. If the stem count is low and/or roots show significant rot to indicate likelihood of winter thinning, then consider turning the stand over. Remember that there is a rotational benefit of 15-20% corn yield increase when planted into fields previously in alfalfa. This should more than pay for the cost of reseeding.

Fall applications of herbicide are more effective than spring applications for killing alfalfa. Apply when temperature is >50°F to avoid reduced control

by herbicide.

~ Dr. Dan Undersander, adapted from NAFA Newsletter, Sept. 19, 2018