Forage News

Keeping Forage-Livestock Producers in Kentucky Informed
Dr. Ray Smith and Krista Lea, editors
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Upcoming Conferences

The Alfalfa and Stored Forages Conference is 6:00-8:00pm Central Time (7:00 to 9:00 PM Eastern) on March 2nd, 3rd and 4th. This virtual event is free to attend. Go to www.KYAlfalfa2021.eventbrite.com to register or simply google KY Forages and click under events. Make sure to register for all 3 nights.

The Novel Tall Fescue Renovation Workshop will be held on March 25th at the Lexington Bluegrass Stockyards. Registration is $65 and includes lunch. Space is limited and face coverings will be required. Register at https://tallfescueky2021.eventbrite.com.

Control Efforts for Poison Hemlock and Buttercups Begin in Late Winter

Late winter is one of the best times of the year to assess fields and fencerows for presence of cool-season weeds. Further, the preferred time to implement control tactics can often be in March as daytime air temperatures begin to rise and are maintained above 55F. This is when cool-season weeds are younger and begin their active vegetative growth before initiating flowers later in the spring. Winter annual and biennial weeds typically germinate from seed in the fall and produce flowers during the spring.

Poison hemlock is easily recognized throughout the winter and early spring. Classified as a biennial, it often grows as a winter annual in Kentucky, particularly plants that germinate during the previous fall. Poison hemlock plants form rosettes that remain green throughout the winter in a somewhat semi-dormant stage (Figure 1). These young rosettes are often found in areas where poison hemlock was present the previous year, particularly along fence rows and other isolated areas. Younger plants can be identified by their fern-like leaves with leaf petioles that have purple spotting and no hairs. After resuming active growth in late winter, they form larger rosettes. Later flower stalks elongate during the spring producing clusters of white flowers in June. Mature plants can grow up to 6 to 9 feet tall (Figure 2).

The best time for control using herbicides is generally when plants are in the younger rosette stages of growth in late February and early March. Herbicide products containing 2,4-D, dicamba+2,4-D (eg. Weedmaster, Brash, Rifle-D, etc.), and aminopyralid (i.e. GrazonNext, DuraCor) are the preferred choices for obtaining effective control. Effectiveness of chemical control can decrease as plants begin to elongate and become more mature. Poison hemlock plants can be toxic to animals; therefore, when using herbicidal control methods on larger plants it is important to remove animals from treated areas. Animals are more likely to graze poison hemlock plants following herbicide treatment than before. On mature plants mechanical methods such as mowing can be an alternative control method if infested areas are accessible. Mowing and other mechanical control efforts should be done after flower stalks elongate but before plants begin to flower.

Another common weed we observe during the spring in grazed pasture fields are the buttercups (Figure 3). Various species of buttercup (*Ranunculus* spp.) are likely to be found in Kentucky. These include Bulbous, Creeping, Hispid, Tall, and Smallflower buttercup. Although their leaf shape, flowers, and other characteristics may vary, many buttercup plants can be noticed by their yellow flowers, commonly with five waxy-like petals. Like other winter annual weeds, buttercup often emerge in the fall, but they can also germinate in late winter and early spring. The peak of the flowering period usually occurs in April, but may persist into May. When flowers are observed, new seed may already be in development on the flower stalks.

Buttercup is more frequently found in fields or field areas that are utilized or heavily grazed in the fall and winter months. This results in thin, bare areas throughout the field creating an environment whereby buttercup seed can readily germinate and seedling plants can thrive. Therefore, one long-term control strategy involves utilizing management practices which help promote growth of desirable forage species and minimize bare areas. Interseeding more desirable forage species may be another practice to consider. This is not always practical in some fields that are essential for winter feeding.

In the short-term, herbicide treatment in early spring is an option. Herbicide products that contain 2,4-D, or other broadleaf type pasture herbicides are generally effective on most buttercup species. To be most effective, herbicide treatment should be completed when plants are in the vegetative stages of growth before flowers develop and produce new seed. Hence, herbicide applications should normally occur by late March. Treatments after flowering offer little benefit since buttercup plants are already producing new seed and plants die back naturally by late spring and will not be present the remainder of the year.

If you do see developing cool-season weed problems as we transition from late winter into early spring you may need to take action soon to begin to correct these problems. In general, herbicide products that contain 2,4-D are usually effective on younger rosettes of poison hemlock, biennial thistles, and buttercups. Another course of action in the spring is a "wait and see" approach before implementing a control tactic. Yet, keep in mind that smaller weeds are easier to control using herbicide treatments than after they increase in size and become more mature. ~ Dr. J.D. Green, UK Extension Weed Specialist.

Fertilizer Nitrogen Sources for Forage Production

As the 2021 forage production season approaches, nitrogen (N) management will be a key component of soil fertility programs for pastures and hayfields. The objective of this article is to provide an update on the fertilizer N sources that can be used to increase both yield and forage quality and inhibitors/stabilizers that can be used to prevent N losses.

Fall and early spring applied dry bulk fertilizer blends intended to provide potash (K), phosphate (P), and sulfur (S) will likely contain N, due to use of dry fertilizer materials like monoammoium phosphate (MAP, 11-52-0), diammonium phosphate (DAP, 18-46-0), and ammonium sulfate (AS, 21-0-0-24S). These fertilizer N salts dissolve readily in moist soil and are excellent N sources since ammonium-N is plant available, not often subject to N loss, and does not need N loss protection. However, due to high cost per pound of N, these are not normally viewed as N sources.

Sole N sources for forage are marketed in both solid and liquid forms. Although any of these can be used, regardless the time-of-year, urea (46-0-0) and urea-ammonium nitrate solutions (UAN, 28- 30- or 32-0-0) are most used. More expensive and harder to purchase, ammonium nitrate (AN, 34-0-0) – half the N is ammonium -N and half is nitrate-N – is another solid fertilizer salt behaving similarly to MAP, DAP and AS.

Urea quickly dissolves in the soil and then hydrolyzes to form ammonium-N. Urea soil behavior is complicated by the possibility of ammonia gas volatilization losses due either to an increasing soil pH (up to pH 9) near the dissolving urea granule or to the near-granule presence of urease (more likely in Kentucky's pasture and hay fields). Urease, an enzyme widely found on both living vegetation and dead crop residues, catalyzes ammonia volatilization during urea hydrolysis. Under certain conditions, urease can cause a large fraction (up to 35%) of urea-N to be lost. Factors affecting the amount of loss are soil temperature (warm) and moisture (moist but drying), wind (a nice breeze), presence of vegetative/ residue cover/urease, and a soil pH greater than 6.5.

In UAN solutions half the N is dissolved urea, a quarter is ammonium-N and a quarter is nitrate-N (from the dissolved ammonium nitrate). UAN is compatible with other liquid nutrient sources (ammonium polyphosphate, APP, 10-34-0; ammonium thiosulfate, ATS, 12-0-0-26S), and certain herbicides (weed and feed) which accounts for increasing UAN use. UAN-urea is subject to volatilization loss as discussed for urea, above. UAN volatilization loss is smaller than that from urea, per pound of applied N, because just half the UAN-N is from urea. (Continued on page 3)

Forage Timely Tips: March

- ✓ Continue pasture renovation by no-tilling seeding legumes. Frost seeding becomes more and more risky with every day that we have above freezing.
- ✓ Place small seed at 1/4 to 1/2 inch deep and check depth several times during planting; slow down for more precise seeding.
- ✓ Continue feeding hay until adequate forage exists in the pasture for grazing.
- ✓ Spring seeding of grasses should be done in early to mid-March (but fall is preferred).
- ✓ Begin smoothing and re-seeding hay feeding and heavy traffic areas.
- ✓ Graze pastures overseeded with clover to reduce competition from existing grasses. *Pull off before grazing new clover plants.
- ✓ Provide free choice high-magnesium mineral to prevent grass tetany on lush spring growth.

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

MAR 2-4 —Alfalfa and Stored Forages Conference, Virtual, 7 to 9 PM EST/6 to 8 PM CST

MAR 23—Virtual Cow-Calf Profitability Conference 7 to 9 PM EST

MAR 25—Novel Tall Fescue Renovation Workshop, In-person, Bluegrass Stockyards, Lexington, KY

Late APRIL, early May—KY Fencing Schools, In-person. More details coming soon.

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Volatilization loss can be avoided/minimized, without inhibitors, using certain timing, rate, or N source management practices. Urea or UAN applied before May 1, when soils are generally moist and cooler, will generally experience little volatilization loss. After May 1 apply urea or UAN when: a) rainfall (0.25 inch or more) incorporation is expected within two-four days; and/or b) there is less forage canopy, resulting in increased fertilizer soil contact. If the urea or UAN application seems likely to suffer volatilization loss, consider a) applying 15-25% more N per acre, b) changing the chosen N source, or c) modifying the urea or UAN by asking the fertilizer retailer to add a volatilization inhibitor.

It is important to note that there are two types of N loss inhibitors, nitrification inhibitors and urease/volatilization inhibitors – unrelated to each other and helpful in two very different situations. Some commercial products combine both types but should not be bought when only volatilization loss is anticipated. In forage production, a need for nitrification inhibition is unusual. Effective urease/volatilization inhibitor active ingredients include: N-(n-butyl) thiophosphoric triamide (NBPT); N-(n-propyl) thiophosphoric acid triamide (NPPT); Duromide (undetailed derivative of NBPT); and, less effective, ammonium thiosulfate (ATS). In many situations NBPT alone will control volatilization, but some commercial products combine NBPT with other urease inhibitors (especially NPPT and Duromide) to extend/improve volatilization inhibition. For a more information on nitrogen sources and volatilization inhibitors, contact your local extension office. ~ Joh Grove and Chris Teutsch

Pub of the Month: Grain, Forage, and Cover Crop Guide for Kentucky (AGR-18)

This is one of the most widely used publications from the University of KY in the Forages and Crops area and it has been recently updated to include even more information. The cover crop section was significantly expanded and more details have been provided on planting rate, planting depth, yield estimates and more for every species. This publication has comprehensive establishment and management details for over 50 crops and forages in an easy to follow table format. Download a copy at http://www2.ca.uky.edu/agcomm/pubs/AGR/AGR18/AGR18.pdf or simply google “University of KY AGR-18” or request a copy from your local county extension office.

Potassium: The ‘I Don’t Get No Respect’ Nutrient

When your only tool is a hammer, everything looks like a nail. So goes an old joke about someone who seems to be fixed on one issue or action. Applying enough fertilizer potassium (often referred to as potash, muriate of potash, or MOP) to forage crops seems to be my current hammer. It is too simplistic to think potassium application fixes every problem, but an increasing number of my farm forage inquiries end up involving a lot of discussion about this fertilizer nutrient. What I hope to do with this article is to help you better understand potassium and its importance in forage production.

First potassium is an essential nutrient for plant production. Potassium is involved in plant water relations - opening and closing of the leaf pores that regulate water flow through the plant. Potassium is also needed for plants to fully express their disease resistance. And potassium is well known for its role in the expression of winter-hardiness in perennial forage crops.

Potassium is removed in large quantities by forage crops, especially hay crops. Each ton of forage will remove about three to four times the potassium as phosphorus. Using a ‘balanced’ fertilizer like triple-19 (19-19-19) over a long period of time can cause a hayfield soil to have sky high soil test phosphorus numbers and soil test potassium values in the basement.

Soils differ in their ability to supply potassium to plants. For example, the Eden silty clay soils of Northern Kentucky typically have high levels of potassium but release added potassium rather slowly to crops. On the other hand, the Tilsit silt loam soils around Princeton are low in K but release added K readily. Frankly, the reasons behind the different K-supplying abilities of various soils are beyond my expertise and the space available in this column. The best way to determine K status of soils is through a soil test.

Timing matters. When potassium is applied to forages in the early spring, plants take up more potassium than needed, a process called luxury consumption. This surplus potassium is removed in the first hay cut, robbing the plant of the long term benefits of the added nutrients. Fall is the preferred time to apply potassium to avoid luxury consumption. When large amounts of K_2O are needed, a split application may be needed, such as after the first cutting and again in early fall. With potassium and perennial forage crops, you are playing the long game for future returns.

Spring-applied potassium on grass pasture fields causes double trouble due to grass tetany or hypomagnesemia in cattle. High soil test potassium inhibits the uptake of magnesium by forage crops, and the resulting high potassium forage inhibits the uptake of magnesium in the rumen. Grass tetany is most frequently seen in mature cows in early lactation. These cows cannot mobilize magnesium from their bones fast enough to replenish that lost in milk, leading to tetany. Feeding a mineral high in magnesium is the best way to prevent grass tetany.

So how do you develop a potassium plan for forage crops? Here are the key takeaways:

Soil test and soil test often. Take the soil sample as long after the last application of potassium as possible, such as each year after the last cutting but before applying fall fertilizer.

Make sure your pH is in the right range. Do not add lime when your pH is too high. If your soil pH is low, apply lime

according to UK guidelines. This will maximize the effectiveness of the fertilizers that you add, including potassium fertilizers.

Get your fertilizer custom blended to match soil test results. In fields with historic applications of Triple-19 we typically see high-very high soil test phosphorus and low-very low soil test potassium.

Add potassium according to soil test recommendations. If your soil test potassium is low, causing the recommended rate to be high, you'll want to split that application.

~Dr. Jimmy Henning, originally in Farmer's Pride. Subscribe to online or print editions https://thefarmerspride.com/

Maximizing Success with Frost Seedings of Clover

A good friend has chided me about always talking about renovating pastures with clover. Our conversations go something like this: "How long are you going to keep telling us to renovate pastures with clover?" My response: "When producers do what I say!" To be fair, this is a producer that DOES do what I say, but he makes a good point. Why do we talk about it every year? Because it is that important. In fact with our forage base dominated by toxic tall fescue, renovation with clover is arguable THE most important practice for pastures. Clover improves yields and quality and directly counteracts the toxic effects of endophyte-infected tall fescue.

The good news is that red clover and white clover can be established by overseeding right now (mid-February to early March) into closely grazed pastures. The freezing and thawing action works these small seed down into the soil; rain and warmth later in spring results in germination.

Since the seeding operation can be this simple, it is easy to forget that all of the establishment rules still apply. We need soil pH 6.4 or better and a medium test for phosphorous and potassium. We need to withhold fertilizer nitrogen (unless we have to use diammonium phosphate (DAP) to get the needed phosphorus). And we need to control the grass competition long enough to let the clover seedlings get up and going. That means we need to top graze or mow to control the spring flush of grass.

More often than not, I think producers feel like clover overseeding is a hit or miss affair. Consequently, there is a real temptation to go cheap on seed, using a common or VNS (Variety Not Stated) brand of clover seed. Certified or proprietary varieties with improved genetics perform markedly better than common or VNS seed, but prices are often not that different. Access the latest UK variety reports by typing 'clover variety uky' into your internet browser to find all of these reports.

Here are some ways to stretch your clover dollar even further:

Use an improved seeding method to increase your chance of success. No till drills are an option, but access and setup can be challenging especially for rental equipment. Other seeding options are available. I recently saw a cultimulcher (spring tooth harrow followed by a corrugated roller) customized with an air seeder for small seeds. The air seeder was mounted on an old cultimulcher frame and can be accurately and easily calibrated to deliver the desired amount of seed. The action of the harrow teeth will open up the sod allowing the seed to be placed just in front of the rear rollers which enhance seed-soil contact. I thought it was a very simple yet innovative improvement over broadcasting seed with a spinner seeder.

Another way to save money with broadcast clover seedings is to use a simple GPS guidance system mounted to your broadcast seeder to avoid overlaps and skips in the field. A field demonstration by Dr. Chris Teutsch at the UK Grain and Forage Center of Excellence in Princeton found a 50% savings in clover seed from using a guidance system. Finally a way to tell where you have been when broadcasting clover seed!

If the cost of renovating large acreages is putting you off, consider intensively working on a small area that can be creep grazed by calves in spring. Creep grazing is where access to a field of high quality forage is limited by fence or gates so that calves can pass through but not cows. You have the double savings of less area to seed and fertilize. This method can be very attractive if the cost of liming and fertilizing the whole field is prohibitive.

The key message here is that clover seedings are important enough that we need to do them regularly. And just because the seeding operation can be simple, we still need to pay attention to the details of seed placement, soil fertility and competition control. Finally, there are ways to improve your return on investment in clover seed.

~Dr. Jimmy Henning, originally in Farmer's Pride. Subscribe to online or print editions https://thefarmerspride.com/