



# FORAGE BITS

Spring/Summer 2018

Publication of the Maryland-Delaware Forage Council, Inc.



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## President's Column

### Celebrate National Forage Week

*By: Les Vough, President*

Have you uttered the childhood nursery rhyme “Rain rain go away” lately? Silage and baleage harvest has been a challenge let alone trying to make dry hay. At this point we’ll be making a lot of 1<sup>st</sup> and 2<sup>nd</sup> cutting hay together at the same time. Has anyone been by Frostburg to see if the church that was reconstructing Noah’s ark along I-68 is working on it again?

National Forage Week will be celebrated June 17-23, 2018. A video and infographics showing the importance of forages have been placed on AFGC’s website, [www.nationalforageweek.org](http://www.nationalforageweek.org). I encourage you to take a look.

The National Forage Week campaign is designed to raise awareness and educate the public about the role of forages in dairy and meat consumption. AFGC is positioning the organization to better understand consumer concerns and inform consumers about the role of forages and forage production.

Mark Kennedy, AFGC president from Missouri says, “National Forage Week was first celebrated four years ago and was well received by the forage community as one might expect, but more importantly others outside of the forage community were made aware of the importance of forage. AFGC’s goal is to create an awareness of the many roles that forages play in today’s society. Forages not only provide quality food for livestock, but also provide food, cover, and shelter for wild life; provide diverse habitat for pollinator species; reduce soil erosion and improve soil health, and filter sediments to reduce water pollution. Not only that, forages also provide beauty to the landscape and provide places for recreation. We’ve got a long way to go, but as AFGC and its state affiliate councils get the word out at the local level we’ll make progress.”

Gary Bates, director of the Beef and Forage Center at University of Tennessee and chairman of the AFGC National Forage Week committee, says, “We often take forage crops for granted. We look at a beautiful pasture and see the grazing livestock and not the forage. The most impactful plants in

our world are right under our feet. Many people do not realize how much forage plants impact their lives. From meat and dairy all the way to ornamental grasses, forages touch most people’s lives in some fashion.”

MDFC is finally entering the electronic outreach age with the development of its own website. Brian Campbell, Maryland NRCS representative to the MDFC board, and Dylan Brown, high school student in St. Mary’s County with an interest in forages and website development, are working together to develop us a website. We look forward to sharing the site address with you shortly. I’m very impressed with what they have put together so far. I want to credit Dylan for his idea and offer to develop a site for us and for Brian, the newest member of the board, for offering to assist Dylan. I like what I am seeing from their efforts and we will have a web site that we will be proud of.

Mark your calendars for the January 2019 series of educational conferences. I was going to say series of Hay and Pasture Conferences but we are adding a fourth location in 2019 with a slightly different conference title. The added conference will be the Central Maryland Forage and Livestock Conference, replacing the former Maryland Cattle Industry Convention & Hay and Pasture Conference held for many years in early March in Hagerstown. Here are the dates and locations for the conferences:

- **Tuesday, January 15**, Delmarva Hay & Pasture Conference, Delaware State Fairgrounds, Harrington
- **Wednesday, January 16**, Southern Maryland Hay & Pasture Conference, Brandywine Fire Department Hall, Brandywine, MD
- **Thursday, January 17**, Tri-State Hay & Pasture Conference, Location TBD
- **Friday, January 18**, Central Maryland Forage & Livestock Conference, Jefferson Ruritan Center, Jefferson, MD

Featured speaker will be Dr. Dennis Hancock, State Extension Specialist - Forage Crops, University of Georgia . Dr. Hancock will address two topics: 1) Advancements in Alfalfa Production and Management and 2) Are Clovers Worth It and What About Phytoestrogens in Clover -- Good or Bad?

It has been a number of years since we have addressed alfalfa production and management and I cannot remember having ever addressed clovers in our conference programs. Dr. Hancock is a popular conference speaker around the country so you will not want to miss attending one of the conference locations.

For now -- Rain rain go away! Let us get some hay made!



## Managing Spring Grass: Going from 0 to 60!

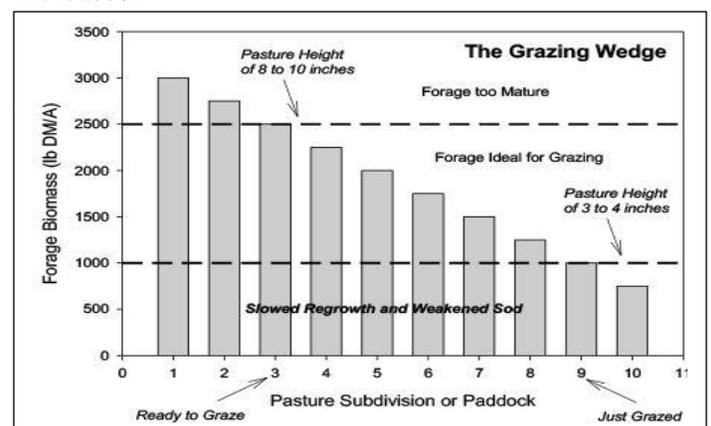
By: Dr. Chris D. Teutsch, Associate Extension Professor, Forage Specialist, and University of Kentucky

Spring can often be one of the most challenging times of the year for graziers. Grass growth goes from nonexistent to excessive in a matter of weeks and in many cases grazing livestock have a hard time keeping up with it. This can result in lower quality forage that is less palatable. The growth of new forage is also delayed by not removing the growing point of our cool-season grasses. The presence of the growing point suppresses tiller formation at the base of the grass plant. The following suggestions can help you to control spring growth and get the most out of your spring pastures.

- Implement rotational grazing. In order to fully utilize the spring flush of pasture growth YOU must be in control of grazing. In a continuous grazing system, the cows are in charge.
- Start grazing before you think the pastures are ready. One of the most common mistakes that graziers make is waiting too long to start grazing in the spring. If you wait until the first paddock is ready to graze, by the time you reach the last paddock it will be out of control. Starting early allows you to establish a “grazing wedge” (Figure 1).
- Rotate animals rapidly. The general rule is that if grass is growing rapidly then your rotation should be rapid. This will allow you to stay ahead of the grass by topping it off and keeping it in a vegetative state.

- Do not apply spring nitrogen. Applying nitrogen in the spring will actually make the problem of too much grass at once even worse. In many cases, you are better off to save your nitrogen for stockpiling in the fall.
- Remove most productive paddocks from rotation and harvest for hay. Graze all paddocks until the pasture growth is just about to get away from you and then remove those productive paddocks from your rotation and allow them to accumulate growth for hay harvest.
- Increase stocking density in the spring. If it is possible, a good option for utilizing spring growth is to increase your stocking density. This will allow you to harvest more of the available forage and convert it into a saleable product. This can be done by adding some stockers or thin cull cows to your rotation and then selling them when pasture growth slows.
- Even out seasonal distribution of forage by adding a warm-season grass. Adding a well-adapted warm-season grass that produces the majority of its growth in July and August would allow you to increase your season-long stocking density to better utilize the spring flush of pasture growth.
- Bush-hog out of control pastures. The benefits of clipping include maintaining pastures in a vegetative state, encouraging regrowth, and controlling weeds. Clipping pastures costs money, so make sure that the primary reason for bush-hogging is pasture management, not aesthetics.

There is not a one-size fits all when it comes to grazing. One of the most important features to build into your grazing system is flexibility. This will allow you to adapt as situations change. Grazing systems are not static entities, but rather dynamic works of art that evolve as your skill level increases!



visit <http://www.uky.edu/Ag/Forage/> and <https://www.youtube.com/c/KYForages>.



## The Value of Cutting Hay Earlier

By: Jimmy Henning, Ph.D-Extension Professor, Plant and Soil Sciences Department, University of Kentucky

We all know that cutting hay earlier is almost always better. That is, as long as you can cut it without it getting rained on. The following is taken from a recent article by Dr. Jimmy Henning summarizing the value of earlier hay cutting. His justification comes from the UK College of Ag publication ‘Quality Hay Production’ (AGR-62) that shows the impact that stage of harvest has on fescue hay forage quality and animal gain (Table 1)



Tennessee research compared three fescue hays cut May 3, May 14 and May 25 (these dates would be slightly later in KY). The 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. The heifers ate more of the early cut hay, 13 lb/day compared to 11.7 and 8.6 for later cut hay.

Early cut hay had the highest digestibility and crude protein. The drop in digestibility was small between May 2 and May 14, but much larger over the next 11 day period. Crude protein dropped about the same (about 3 percentage units) for each 11 day delay.

Gain per day ranged from 1.39 to 0.42 lb/day for the three hays. The earliest cut hay supported the best gains, as expected. The decline in average daily gain was about the same for each 11 day delay in cutting.

Maturity decreased average daily gain much more than forage digestibility. A delay of 22 days dropped digestibility by 17% (68 to 56%). Over

this same period, daily gain dropped by 70% (1.39 to 0.42 lb/day). Small changes in quality made big differences in gain. Although the forage yield was lower in the early cut hay, there were 22 extra days of forage growth compared to the May 25 cutting. Enough growth to virtually guarantee a high quality second cutting or grazing before the heat of summer. Cutting hay early pays, especially for growing cattle. And small differences in maturity can make big differences in gain and your bottom line.

Table 1. Effect of stage of harvest of fescue hay on forage quality and animal gain.\*

Stage of harvest, date of cutting	Dry matter intake lb/day	Percent digestibility	Percent protein	Feed efficiency, lb hay fed per lb of gain	Yield, lb per acre	Gain, lb per day
Late boot to head, May 3	13.0	68	13.8	10.1	1334	1.39
Early bloom stage, May 14	11.7	66	10.2	13.5	1838	0.97
Early milk stage – seed forming, May 25	8.6	56	7.6	22.5	2823	0.42

\*Holstein heifers were used, average weight – 500 lb.



## Steps for Speeding Up Hay Curing

Dr. R. Mark Sulc, Extension Professor, Horticulture & Crop Science, and University of Ohio

The weather outlook is for rain events on about three day cycles over the next couple of weeks. Some missed the recent nice weather window for making hay. What can we do now to get forage cured as quickly as possible? This article summarizes options and key practices to shorten the time of hay drying in the field. *Much of this article is adapted with permission from an article published by the author in Farm and Dairy on June 2, 2010, available [here](#).*

### Haylage vs. hay.

Consider making haylage/silage or balage instead of dry hay. Since haylage is preserved at higher moisture contents, it is a lot easier to get it to a proper dry matter content for safe

preservation. Proper dry matter content for chopping haylage can often be achieved within 24 hours or less as compared with 3 to 5 days for dry hay.

Proper dry matter content for silage ranges from 30 to 50% (50 to 70% moisture) depending on the structure used. Wrapped balage should be dried to 40 to 55% dry matter (45 to 60% moisture). Compare that to dry hay that should be baled at 80 to 85% dry matter (15 to 20% moisture), depending on the size of the bale package. The larger and more dense the dry hay package, the dryer it has to be to avoid spoilage.

### **Mechanically condition the forage.**

Faster drying of cut forage begins with using a well-adjusted mower-conditioner to cause crimping/cracking of the stem (roller conditioners) or abrasion to the stems (impeller conditioners). At least 90% of the stems should be cracked or crimped with roller conditioners or should show some mechanical abrasion when using impeller conditioners.

Some excellent guidelines for adjusting these machines can be found in an article by Dr. Ronald Schuler of the University of Wisconsin, available online [here](#).

### **Consider desiccants.**

Desiccants are chemicals applied when mowing the crop that increase the drying rate. The most effective desiccants contain potassium carbonate or sodium carbonate. They are more effective on legumes than grasses and most useful for making hay rather than silage or balage. Desiccants work best under good drying conditions, but don't help much when conditions are humid, damp, and cloudy. Consider the weather conditions before applying them.

### **Maximize exposure to sunlight.**

I once heard someone say "You can't dry your laundry in a pile, so why do you expect to dry hay that way?" Exposure to the sun is the single most important weather factor to speed drying. The trick is to expose to sunshine as much of the cut forage as possible. The swath width should be about 70% of the actual cut area. The mowers

on the market vary in how wide a windrow they can make, but even those that make narrow windrows have been modified to spread the windrow wider. Details can be found in articles at the Univ. of Wisconsin website mentioned above (see especially "*Getting the Most from the Mower Conditioner*" by Kevin Shinnars). Another way to spread out and aerate the crop for faster drying is with a tedder. Tedders are especially effective with grass crops, but can cause excessive leaf loss in legumes if done when the leaves are dry. Tedders can be a good option when the ground is damp, because the crop can be mowed into narrow windrows to allow more ground exposure to sunlight for a short time, and then once the soil has dried a bit the crop can be spread out with the tedder. When making haylage, if drying conditions are good, rake multiple wide swaths into a windrow just before chopping. For hay, if drying conditions are good, merge or rake multiple wide swaths into a windrow the next morning when the forage is 40 to 60% moisture to avoid excessive leaf loss.

Research studies and experience have proven that drying forage in wide swaths can significantly speed up drying. Faster drying in wide swaths results in less chance of rain damage and studies by the University of Wisconsin showed that wide swaths (72% of the cut width) result in lower NDF and higher energy in the stored forage.

### **Consider a preservative.**

Sometimes the rain just comes quicker than we have time for making dry hay. As mentioned above, making haylage helps significantly with this. A second option is to use a preservative. The most effective preservatives are based on propionic acid, which is caustic to equipment, but many buffered propionic preservatives are available that minimize that problem.

Preservatives inhibit mold growth and allow safe baling at moisture contents a little higher than the normal range for dry hay. Carefully follow the preservative manufacturer's directions and application rates for the hay moisture content at baling.

### Watch wet bales carefully!

If hay is baled at higher moisture contents that are pushing past the safe limits, keep a close watch on them for two to three weeks. Use a hay temperature probe and monitor the internal temperature of the hay during the first three weeks after baling.

Every year someone's barn burns down because of spontaneous combustion of wet hay. So if hay is on the wetter side, keep it outside or in a well-ventilated area. Don't stack wet hay, because that prevents the heat and moisture left in the hay from escaping.

It is normal for hay to go through a "sweat" in the few days after baling. Internal temperatures of 110 F in the first five days after baling are quite common in our region and are not a big concern.

Hay bale temperatures of 120 to 130 F will likely result in mold growth and will make the protein in the hay less available to animals. While those temperatures are not high enough to cause hay fires, the concern is if the mold growth continues and pushes temperatures upward into the danger zone.

If the temperature in the hay continues to rise, reaching 160 to 170 F, then there is cause for alarm. At those elevated temperatures, other chemical reactions begin to occur that elevate the temperature much higher, resulting in spontaneous combustion of the hay in a relatively short period of time.

My hope is that a disastrous hay fire never happens to you or someone you know! It can be avoided by careful attention to the management practices along with cooperation from the sun. Have a safe and successful hay and haylage making season!



### The Cost of a Windrow

By: Dr. Dan Undersander

Professor, Agronomy College of Agricultural & Sciences

When harvesting hay or haylage we tend to think in terms of how long it takes to get the hay off the

field. However, the first concern for quality hay/haylage should be how long it takes to lose the first 15-20% moisture. Forages have 75-80% moisture when cut; they will continue to respire sugars (break down and give off heat and carbon dioxide) at a high rate until the plant is dried to 60% moisture. If we want to save the energy of the starch and sugars for our cattle, we need to dry off the first 15-20% moisture as quickly as possible.

Most of the respiration takes place in the leaves. We should remember that conditioning is for drying the stems but has little impact on drying the leaves. A wide swath has the biggest effect on rate of leaf drying. Leaves dry faster in a wide swath because:

- More sunlight falling on the field is intercepted for drying. (A windrow intercepts only 25-30% of sunlight falling on the field while a wide swath intercepts 70-100% of sunlight.)
- Light keeps the leaf stomates open longer, so moisture can leave through leaf openings. Since most of the forage in a windrow is in the dark, the leaf stomates close to seal the leaf surface.

**Table 1. Forage Losses Due to Respiration**

Dry matter loss	2%	4%	8%
	—Economic Loss —		
Hay Value \$150/ton	\$3.00	\$6.00	\$12.00
Hay Value \$186/ton <sup>1</sup>	\$3.20	\$6.40	\$14.88
—Forage quality of Prime (>151 RFQ) hay —			
ADF, %	NDF, %	RFQ	Value \$/ton
30.0	40.0	153	\$186 <sup>1</sup>
-Forage quality if lose 40% dry matter starch/sugar-			
33.0	43.4	134	\$148 <sup>1</sup>
Value of quality loss/ton			\$38
Value of dry matter and quality loss			\$44.40
<sup>1</sup> Hay price for large square bales from Midwest Hay Price summary, March 26, 2018			

Table 1 shows the losses that can occur due to making a windrow rather than a wide swath. Data indicate that starch and sugar loss can range from 2-8% of dry matter. If we assume a median starch/sugar loss of 4% of dry matter due to hay in a windrow compared to a wide swath, then the dry matter economic loss is \$6.40/ton, according to current hay prices in the Midwest for large square bales.

However, the respiratory losses of starch and sugar also increase the fiber content of the forage. If the forage was near 40% NDF (prime hay/haylage) when cut, then the 4% starch loss will increase fiber 3.4 units and lower the quality to Grade 1 hay (125-150 RFQ). Grade 1 hay is currently selling for \$38/ton less than Prime hay. The value to dairy producers is about twice the price differential between hay grades.

Many farmers have switched to making wide swaths when mowing. A wide swath is the single most important factor affecting forage drying rate; it is more important than conditioning. Farmers who continue to put hay into windrows are increasing drying time and risk of rain damage. They are also currently losing about \$44.40/ton due to yield and quality losses from increased respiration.

Considering this dollar loss, most farmers could figure out a way to make wider swaths with their existing equipment; they should also look at wide swath mowers when replacing mowing equipment. National Alfalfa & Forage Alliance News Release May 15, 2018.



## Maryland Beef Producer's Short-Course

*By: Racheal Slattery*

*Beef and Dairy Coordinator, University of Maryland  
Department of Animal Science*

The University of Maryland Department of Animal Science in partnership with University of Maryland Extension has designed this short-course to provide producers educational information and hands-on training in several areas of beef production.

Whether you're just thinking of starting your own beef production operation or have been in the industry for years, this short-course will have something for all.

### Topic areas that will be covered

**include:** determining daily operating costs, understanding EPD's, Veterinary Feed Directive, body condition scoring, forage sampling and storage, nutrient management, pasture and paddock development as well as many others.

**Educational resources will include:** body condition score guides, determining your unit cost of production, budget workbooks (cowherd system

and purchased cows), estrus sync planner, grazing and hay records spreadsheets.

To participate in the Maryland Beef Producer's Short-Course, **please submit a completed application and registration fee of \$75 by June 1, 2018.** All educational materials, meals (dinner and lunch), and breaks are included. **Enrollment is limited to 30 participants**, and applicants will be notified of their status no later than June 4, 2018.

Please contact **Racheal Slattery**, Beef and Dairy Coordinator at **301-405-1392** or via email **rslatt@umd.edu** (link sends e-mail) with any questions or concerns.

## Maryland Short-Course Application

### Series I Dates

Location	Date	Application Deadline
Eastern Shore - Queen Anne County - <b>Wye Angus</b> (link is external)	September 14-15, 2018	September 5, 2018
Western Maryland - Washington County - <b>WMREC</b> (link is external)	November 2-3, 2018	October 22, 2018
Northeast Maryland - Baltimore County	January 2019 (Date TBA)	TBA

**The Maryland Beef Producer's Short-Course Series I in Southern Maryland will be sponsored in part by the Southern Maryland Agriculture Development Commission (SMADC). For more information about this organization, please visit their website: [www.smadc.com](http://www.smadc.com)**



## Pigweeds in Maryland Pasture

By: Brian Campbell

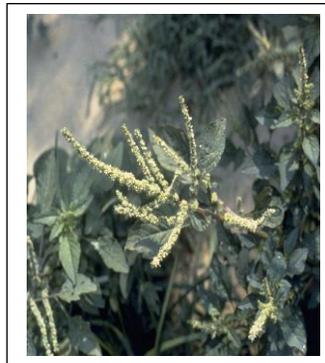
Grazing Specialist, USDA Natural Resources Conservation Service

“Pigweed” can refer to any weedy member of the genus *Amaranthus* (which includes the popular love-lies-bleeding flower). In Maryland agriculture, the most problematic of these summer annuals include redroot pigweed (*A. retroflexus*), smooth pigweed (*A. hybridus*), tall waterhemp (*A. tuberculatus*), and the notoriously herbicide-resistant Palmer amaranth (*A. palmeri*). By far, though, the most prevalent pigweed in Maryland pastures is spiny amaranth (*A. spinosus*). It is important to be aware that there are other pigweeds in Maryland and that they can cross to create hybrids. In 2011, an herbicide-resistant cross between spiny amaranth and Palmer amaranth was [discovered in Mississippi](#). Identification of pigweeds can be challenging, even at maturity. Spiny amaranth’s most distinguishing characteristic is the painful spines located where its branches meet the stem.

Livestock usually eat pigweeds without any apparent harm and the foliage can be a high-quality forage – low in cellulose and high in crude protein. However, pigweeds can store relatively large amounts of nitrates, making them potentially dangerous to livestock via nitrate poisoning. Ruminants like cattle, goats, and sheep are most at risk, with hogs and horses less so. Many other forage plants and pasture weeds that can be excellent forages also pose nitrate-poisoning potential when grown in nitrogen-rich environments. These include cereal grains – especially corn, millet, oats, rye, and sorghum; close relatives johnsongrass and sorghum-sudangrass; and forbs like dock, lambsquarter, ragweed, smartweed, and sunflower. Pigweeds tend to be tolerant of drought and a wide range of soil conditions. In my experience, spiny amaranth is most prevalent in heavy-use areas like dirt sorting pens, holding areas, sacrifice lots, and around watering troughs. Because it is one of the few plants that can thrive in these highly compacted soils, spiny amaranth gets to take advantage of the large levels of nitrogen that livestock deposit at these sites. For these reasons, the places where

spiny amaranth is likely to be prolific are also the nitrogen-rich places where it is most likely to cause nitrate poisoning.

Herbicide-resistance in pigweeds is relatively high and will continue to grow, even as farmers increasingly rotate through different classes of herbicides to fight that resistance. Some states are experiencing pigweed that is resistant to 3 or 4 classes of herbicide: a scary situation for row crops that rely on herbicide applications! Managers of pastureland have much more flexibility than those growing row crops in that they can spot-mow clusters of pigweed as needed to prevent these annuals from producing seed. A targeted mowing campaign that cuts the plants near the ground before or during flowering should greatly reduce the incidence of pigweed over time. Pre-emergent herbicides and post-emergent herbicides with multiple modes-of-action (that are labelled for pigweed) are also important options. The second half of any battle with weeds is to fill the void with plants that you actually want. One suggestion for the nitrogen-rich, compacted soils dominated by spiny amaranth is sorghum-sudangrass. Without vegetation, heavy-use livestock areas will erode or become extremely compacted. Even if nothing else about the plant is appealing, spiny amaranth does a good job of repairing soils damaged by compaction and excess nitrogen.



*Spiny amaranth - Edwin Martin, Lady Bird Johnson Wildflower Center*



*Palmer amaranth - Alan Cressler, Lady Bird Johnson Wildflower Center*