FORAGE BITS

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MD-DE Forage Council Officers and Board of Directors

2021 Maryland-Delaware Virtual Forage Conference Recap

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The Maryland-Delaware Forage Conference took place online via two half-day sessions on January 12 and January 19, 2021. This virtual format was a first for the forage conference, which is a joint venture between the Maryland-Delaware Forage Council, University of Maryland Extension, and University of Delaware Extension and is traditionally held as an in-person event at four locations across the region.

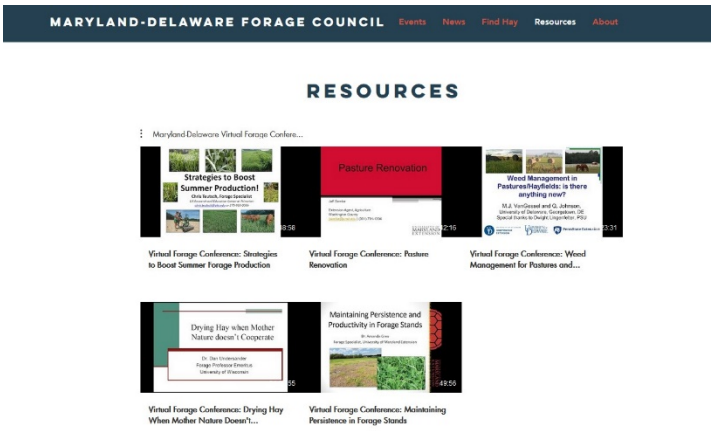
The goal of the forage conference is to provide up-to-date, forage-related information and education to forage producers, grazers, livestock owners, and associated industry personnel. Featured speakers for the 2021 virtual conference included Dr. Chris Teutsch from the University of Kentucky, who spoke on *Strategies to Boost Summer Production with Warm-Season Forages*, and Dr. Dan Undersander, formerly with the University of Wisconsin, who spoke on *Hay Drying Strategies for when Mother Nature Doesn't Cooperate*. Other topics at the 2021 conference included pasture renovation, weed management for pastures and hayfields, maintaining forage stand persistence, and optimizing soil fertility for forages.

The virtual conference was well attended, drawing a total of 238 participants on January 14th and 220 participants on January 19th. Attendees included a mix of producers and industry professionals who joined not only from the mid-Atlantic region but also from across the nation. The conference also served as an opportunity for participants to earn continuing education credits towards nutrient management, pesticide, and Certified Crop Advisor certifications. Collectively, a total of 151 and 145 participants in Maryland, Delaware, Pennsylvania, and West Virginia earned continuing education credits on January 14th and January 19th, respectively.

Overall, participant feedback from the conference was largely positive, with 88% of participants reporting that they found the information useful, 89% reporting increased knowledge, and 71% indicating that they intended to implement a change on their operation based on information learned during the conference. A number of participants also indicated their interest in having online meetings as a learning option for future years; the Forage Council will keep this in mind as we discuss plans for next year and moving forward.

For those who were not able to join us for the conference, or for anyone looking for a refresher, the recordings for each of our speaker presentations are available for your viewing pleasure—links to the videos can be found on the Maryland-Delaware Forage Council website under the 'Resources' page (https://www.foragecouncil.com/resources) or through the Maryland Forages YouTube page (https://www.youtube.com/playlist?list=PLoP5Br3n_Rt3xPGFzBpR56AlxdVVwMukk).

While those of us in Extension and the Maryland-Delaware Forage Council missed seeing everyone in person this year, we were happy to be able to host this conference virtually. We hope it was an informative and educational opportunity and we look forward to seeing everyone at the next event!



Spring Forage Nitrogen Management

Amy Shober, Sydney Riggi, and Jarrod Miller
University of Delaware Extension

Early Spring Nitrogen Application Strategies

Nutrient loss potential is still high during the late winter and early spring, especially when conditions are as wet as we have seen in the last few weeks. Here we quickly outline some strategies for getting maximum return on your spring nitrogen (N) applications, while minimizing the potential for losses to the environment. These strategies will ensure you are ready to go when soils dry out and conditions are more favorable for plant growth.

Grasses or Grass-legume Mixes

Consider a spring topdress application N to pastures to promote growth, especially if pastures have thinned and were not fertilized in the fall. Early spring application can help extend hay supplies. We recommend N applications of 30 lb/A to stimulate growth in pastures with <25% clover in the stand. For stands with 25-50% clover, reduce the N application to 15 lb/A. Apply N when additional tillers start forming and before stem elongation Nitrogen applications are not recommended for pastures with >50% clover or legume.

Early spring manure applications are not best for quick greenup of grass species. Manure N availability will be delayed with cool temperatures due to low microbial activity. Microbes must be active to break down organic matter and release N in a plant available form; microbial activity is slow until soil temperatures reach around 50-55 F (late April to early May). Instead, apply commercial N fertilizers (either liquid or granular), which are immediately available to crops coming out of dormancy. Walk the fields about 30 days after the first application of N in the spring to determine if more N is needed.

Skip P and K fertilization at this time. Winter breakdown of plant tissues due to freeze and thaw events should provide enough P and K to support spring growth, unless soil test levels are LOW (<25 FIV). Save P and K applications for early summer after the first hay harvest.

Once fields green up, avoid grazing too early; wait until grasses are 4 inches tall to prevent overgrazing and animal health issues (e.g., grass tetany).

Cereal crops

Cereal crops provide excellent feed for livestock when grazed or cut for silage or hay. Cereal crops grown for forage will benefit from spring N applications of 60-90 lb/A. As with grasses, apply N in early spring (late February to early March) to stimulate growth. A single N application is ok. However, splitting the spring N application can reduce lodging and improve yield and protein levels. We highly recommend splitting spring N applications if the crop will be grazed to prevent nitrate poisoning of livestock. For split N applications, apply approximately 30 lb/A of N at green up. Terminate grazing and apply the remainder of the N just prior to joining (Feekes 5).

If you plan on growing cereal crops for grain (with or without grazing), more intensive N management is recommended. Research out of Virginia Tech supports splitting N applications to wheat or barley in the spring to achieve higher yields. The first application of N is recommended at green up, around Feekes growth stage 2-3 based on tiller counts (Table 1). The second N application is recommended at jointing (approximately Feekes 5) based on a whole plant total N tissue test (Table 2); cut the whole plant ½ inch above the soil line and submit the sample to a reputable laboratory.

If only a single spring application is possible, we recommend applying N at jointing (Feekes 5) if tiller counts at green up are >105 tillers per square foot for wheat and >150 tillers per square foot for barley. If tillering is below these thresholds, apply N at Feekes 2-3. Virginia Tech researchers recommend that this single early season N application be based on the results of a soil nitrate test (to a 3 foot depth). If collecting a 3 ft soil sample is infeasible, use the tiller count guidance in Table 1 and double the N rate.

Instructions for completing early season tiller counts:

1. Lay a yard stick (3 feet long) on the ground and count the tillers along the length of the stick.
2. Multiply the number of tillers by 4 and divide that number by your row width. This will give you tiller density in tillers/sq. ft.
3. Repeat these counts in five locations in the field and average the values.

Table 1. Nitrogen rate recommendations for early spring greenup application to wheat or barley at Feekes growth stage 2-3.

	Wheat tiller Density (tillers per square ft) at Feekes 2-3						
	<60	**68**	**75**	**83**	**90**	**98**	**>105**
lb N/A	60	50	40	30	20	10	0

	Barley tiller Density (tillers per square ft) at Feekes 2-3				
	<50	**75**	**100**	**125**	**>150**
lb N/A	50	40	25	10	0

Table 2. Nitrogen rate recommendations for second spring application to wheat at Feekes growth stage 5.

	Percent N in Wheat Tissue from Whole Plant Sampled at Feekes 5						
	<2.0	**2.5**	**3.0**	**3.5**	**4.0**	**4.5**	**>5.0**
lb N/A	120	100	80	60	40	20	0

	Percent N in Barley Tissue from Whole Plant Sampled at Feekes 5				
	<2.5	**2.75**	**3.0**	**3.25**	**>3.5**
lb N/A	100	75	50	25	0

USDA Fact Sheets from a Conservation Innovation Grant between NRCS and Virginia Tech

Source: Virginia Forage and Grassland Council

The USDA fact sheets described below were developed from a Conservation Innovation Grant with Virginia Tech titled, *Demonstrating conversion of wildtype to novel endophyte fescue pastures for greater livestock performance and better environmental outcomes*. Follow this link https://vaforages.org/resources/publications/ to the Publications tab to view the fact sheets and learn more about fescue toxicosis, fescue sampling, strategies for mitigation, conversion to novel endophyte and management after conversion.

- Fescue Toxicosis – What It is and How It Costs You
  This fact sheet explains in simple terms the fungal endophyte that infects fescue plants, the toxic alkaloids it produces, the symptoms exhibited by affected livestock, the resulting negative impacts to the grazing animal, the environment and the economic impact to the bottom line.
- Sampling Tall Fescue for Endophytes and Alkaloids
  This fact sheet explains how to properly sample and test for endophyte infection of fescue and the toxic alkaloid concentration including when and how to sample pastures, where to send the samples then how to use the test results.
- Strategies to Mitigate Tall Fescue Toxicosis
  This fact sheet provides strategies for mitigating the effects of toxic endophye fescue by understanding how toxic alkaloid levels change by season, the effect of dilution by other forages, and understanding toxic alkaloid levels in stockpiled fescue, dry hay, baleage or silage and effective strategies for improving livestock performance.
- Converting from Wildtype to Novel Tall Fescue
  This fact sheet explains the difference between toxic endophyte, endophyte free and novel endophyte fescue; considering renovation to novel endophyte fescue, minimum acreage to convert, removal of the toxic fescue and conversion to novel endophyte fescue.
- Managing Novel Tall Fescue for Persistence
  This fact sheet addresses questions about novel endophyte fescue persistence, management of new stands and simple management reminders to avoid recontamination with toxic fescue.
- Extend Grazing with Summer Stockpiling
  This fact sheet explains the practice of summer stockpiling fescue or mixed grass stands as a strategy for extending the grazing season. It includes a 5-step strategy diagram to visualize cattle and deferred grazing management while planning for and using this technique from early spring through the following winter.

2020 Orchardgrass Variety Trial Update

Amanda Grev,
Agriculture & Food Systems, Western Maryland Research and Education Center

As new forage varieties continue to be developed and released, the efficacy and performance of these varieties needs to be evaluated. Similarly, as forage and livestock producers are making decisions on which forage species and variety to establish, it is helpful to compare performance data from a number of available varieties. To this end, the University of Maryland Extension Forage Team is in the process of establishing a series of forage variety trials.

In September 2019, an orchardgrass variety trial was established at the Western Maryland Research and Educa-tion Center (WMREC) in Keedysville, MD in order to evaluate select orchardgrass varieties based on forage pro-duction and quality. Plots were arranged in a randomized complete block design with each individual entry repli-cated four times. All varieties were planted at a rate of 25 pounds per acre; seed was broadcast and then culti-packed to establish good seed-to-soil contact. The varieties planted included: Alpine, Bounty II, Extend, HLR Blend, Inavale, Olathe, Pennlate, and Rushmore II.

Data collection began when the majority of forage varieties reached the boot stage of development (prior to seed head emergence). The first cutting occurred on May 18, 2020; this was followed by a second cutting on August 3, 2020 and a third and final cutting on September 28, 2020. At each cutting, forage biomass was collected along a 3 ft. by 20 ft. strip from the center of each plot using a forage harvester set to a cutting height of 4 inches. Collected biomass was weighed, dried in a forced air oven, and weighed again for dry matter and forage yield determination. Sub-samples were also taken from each plot and sent to a commercial laboratory for forage quality analysis.

Seasonal cumulative yield for all orchardgrass varieties ranged from 3.6 to 3.8 tons per acre (Figure 1). Statistical analysis indicates no significant difference in forage yield among any of the varieties for the 2020 growing season. Forage quality analysis is underway; forage quality results will be shared once the analysis is complete.

A big thank you to Jeff Semler and the entire WMREC crew for their assistance in getting this trial started and their help with harvest and data collection. Seed for this study was donated by DLF Pickseed, Seedway, and Kings Agriseeds. These plots will continue to be evaluated for yield, quality, and additional performance parameters in the coming years. We hope to expand the trial to include multiple locations, as well as additional forage species and varieties.

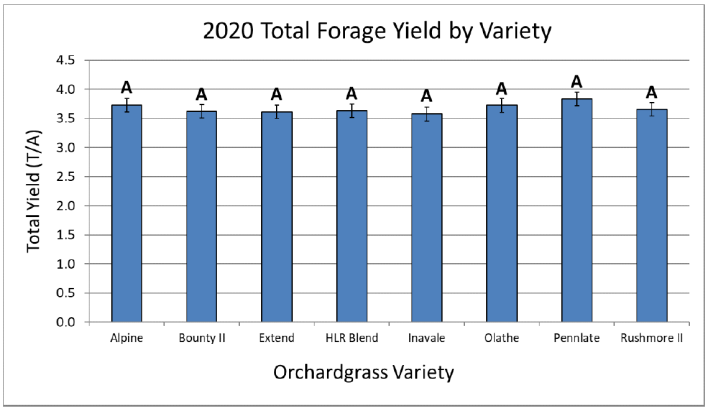


Figure 1. *Orchardgrass forage variety trial yield results for 2020, presented as total seasonal yield in tons per acre. Varieties marked by a common letter indicate similar yield production (i.e. no significant difference).*

Spring Weed Control For Pasture And Hayfields

Amanda Grev,
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As things are greening up this spring, you may notice a few not-so-friendly plants popping up around your fields. If you have not already done so, now is the time to scout your pastures and hayfields in search of winter annual and biennial weeds. When it comes to weed control, timing of herbicide application is critical and it is important to spray when weeds are most susceptible to achieve maximum effectiveness.

Winter annuals typically germinate in the fall, overwinter, and complete their reproductive cycle in the spring or early summer. Common winter annual species include chickweed, purple deadnettle, field pennycress, henbit, horseweed/marestail, shepherd's purse, and the mustard species. Annuals are best controlled during the seedling and early vegetative stage when they are young and actively growing. Herbicide applications will be more effective if made at this stage while they are still vegetative and more susceptible and will prevent them from flowering and producing seed. At this time of year, these winter annuals are growing rapidly and have already or will soon begin to flower and set seed. If the winter annuals in your fields have moved beyond this stage, an application may offer some control but you may also want to take note of those weedy areas now and target them later this year with a late fall application.

Biennials live for two growing seasons, with the first year consisting of only vegetative growth as a seedling and rosette and the second year consisting of vegetative growth and also reproductive growth in the form of an elongated flower stalk. Common biennial species include burdock, bull thistle, musk thistle, and wild carrot. These weeds are best controlled during the seedling and rosette stage, and should be treated now while they are smaller and more susceptible and before they begin to bolt.

There are a number of herbicides available for control of broadleaf weeds. Herbicide selection should be based on the type of forage and weed species present. The most common herbicides used for control of broadleaf weeds in grass hay or pasture are the plant growth regulator herbicides, which includes products containing 2,4-D, dicamba, triclopyr, fluroxypyr or a mix of these (see the table below for a list of common products). These products are safe if applied to grass forages at the labeled rates but can kill or injure desirable broadleaf forages (i.e. clover) in grass-legume mixed pastures.

If weedy annual grasses such as crabgrass, foxtail, fall panicum, and Japanese stiltgrass are problematic, pendimethalin (Prowl H2O) now has a supplemental label that allows for its use on established perennial pastures or hayfields grown for grazing, green chop, silage, or hay production. It may be applied to perennial grass stands or alfalfa-grass mixed stands. Prowl H2O may be applied as a single application in the early spring, or for more complete control it can be applied as a split application with the first application in early spring and the second application after first cutting. Keep in mind, this herbicide is a pre-emergent herbicide, meaning it will only control weeds if applied prior to germination. If soil temperatures in your area are already above 50°F it is likely that crabgrass and stiltgrass have already germinated, but a split application of Prowl H2O now and after first cutting can help control foxtail. There are currently no herbicides labeled to control emerged weedy grasses in grass stands or alfalfa/grass mixes.

Note that if forages were recently seeded and are not yet established many of these herbicides can cause severe crop injury. Most herbicide labels for cool-season perennial grasses state that the grasses should be well established with at least 4-5 inches of growth, although some labels are more restrictive than this. In addition, some of these herbicides have haying or grazing restrictions following application. Always read and follow the guidelines listed on the product label for proper rates, timing, residual effects, and any grazing or harvest restrictions following application.

Lastly, remember that while herbicides can be a useful tool for weed management in pastures and hayfields, they are not the only option for weed control. A program that integrates several different control strategies is generally more successful than relying on a single method. For maximum results, include cultural practices such as selecting adapted species and maintaining optimum soil fertility, mechanical practices such as timely mowing or clipping to suppress weed seed production, and biological practices such as utilizing livestock for controlled grazing or browsing. And remember that weeds are opportunistic; the best method for weed control is competition with a healthy, dense stand of desirable forage species.

Product	Active Ingredients	Application Rate*	General/Restricted Use
2,4-D	2,4-D	1 to 2 qt/A	General
Banvel/Clarity	dicamba	0.5 to 2 pt/A	General
Crossbow	2,4-D + triclopyr	1 to 6 qt/A	General
PastureGard HL	triclopyr + fluroxypyr	0.75 to 4 pt/A	General
Prowl H2O	pendimethalin	1.1 to 4.2 qt/A	General
Remedy Ultra 4L	triclopyr	0.5 to 4 pt/A	General
WeedMaster	2,4-D + dicamba	1 to 4 pt/A	General

*For use in established grass pasture or hayfields

Forage Bits is a publication of the Maryland-Delaware Forage Council. It is compiled and edited by Ben Beale, Agricultural Extension Educator-St. Mary's County. **Please send any comments, questions or submissions to Ben at the St. Mary's Extension Office: PO Box 663, Leonardtown, MD 20650, fax 301-475-4483, phone 301-475-4484 or e-mail at bbeale@umd.edu**

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MDFC was organized in 1983 to serve as a forum for forages and grasslands in Maryland and Delaware and to serve as the integrator of the numerous businesses, industries and service agencies associated with forage production, evaluation, marketing and use. The council seeks to coordinate the efforts of various groups and organizations with forage interests to increase the effectiveness of progress on behalf of an improved forage industry.