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PENNSYLVANIA FORAGE and GRASSLAND NEWS

Volume 26, No. 4, Fall 2016

Supporting Members of PFGC

Many businesses support the PFGC through their membership and involvement in many of the PFGC sponsored activities. Our supporting members for 2016 are:

AgChoice Farm Credit
Barenbrug, USA
Delmhorst Inst.Co.
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Lancaster Farming
Northampton County Seeds
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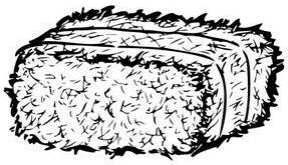
2016 PFGC Hay Show

Thank you to everyone who participated in the Hay Show at Penn State's Ag Progress Days, sponsored by the PFGC. The results, awards, and premiums have been sent to all participants. Overall, it was a great Hay Show with excellent participation, with about 20 more entries than 2015. Passersby enjoying stopping and viewing the hay. Hay for the Hay Show is judged based on visual and chemical characteristics. Hay Show participants should be on the lookout for rule changes and new class updates for the 2017 Hay Show.



Congratulations to Grand Champion award winners in each section! (See more Hay Show details on pg. 3)

Section I – Field Cured

- Ray Mack; Pen Argyl, PA – Alfalfa, Later Cutting

Section II – Partially Field Cured plus Heat Dried

- Dennis Newhard; Nazareth, PA – Alfalfa, Later Cutting

Section III – Partially Field Cured plus Hay Preservative

- Heidel Hollow Farms; Germansville, PA – Alfalfa, Later Cutting

Forage Variety Trials Report Available

The 2015 Penn State "Forage Variety Trials Report" is available, at your county extension office. It can also be downloaded from the web at:
http://pubs.cas.psu.edu/FreePubs/pdfs/uc068.pdf

2017 Forage Conference Date Set

Mark your calendar! The 2017 PFGC Forage Conference will be held on Wednesday, February 22, 2017 at the Grantville Holiday Inn. Visit with industry professionals and farmers and enjoy the day listening and learning about educational topics pertaining to forage production from industry leaders! Further details are underway. For more information, contact Jessica Williamson at (814) 865-9552 or jaw67@psu.edu. The conference is sponsored by the Pennsylvania Forage and Grassland Council.

"Like" PFGC on Facebook!

Find us on Facebook by searching 'Pennsylvania Forage and Grassland Council' to keep up with updates and important links! Stop by and see pictures of the Hay Show, view dates of upcoming events, and read relevant industry articles. Don't forget to click the thumbs up "Like" button before you leave the page!

PFGC Picnic at Ag Progress Days

The Annual PFGC picnic was held at the Penn State Agronomy Research farm at Rock Springs on Wednesday, August 17, the week of Ag Progress Days. Attendees enjoyed a tour of the forage research trials prior to dinner, followed by a nice barbeque meal and fellowship before meeting some new faces within the PFGC.

The picnic is held on an annual basis the Wednesday evening of Ag Progress Days. If you have not attended for a while or have never been, make plans to join us next year for food, fun, and fellowship!

Nominate Someone You Know for a PFGC Award!

The PFGC sponsors several awards to acknowledge outstanding performance by forage producers and persons who work with forage producers. These awards are described in the enclosed awards brochure (peach colored). We invite you to look over the different awards and nominate qualified persons (you can nominate yourself) to be considered for an award. Jessica Williamson serves as the contact person for the awards committee and would welcome inquiries for more details on any of these awards. Jessica can be reached at jaw67@psu.edu or (814) 865-9552.

Breathable Film Wrap Improves Hay Consumption

Large round bales can be made for less cost than large square bales, and because the round bale shape helps shed precipitation, low-cost outdoor storage is possible. However, uncovered bales stored outdoors are subject to losses and deterioration of nutrient composition due to weathering. Additional losses can occur during feeding, mainly due to animal rejection of the weathered portion of the bale.

Our research has shown that outdoor storage losses are less when bales are secured with net mesh rather than with twine. Wrapping with net mesh requires only three to five revolutions of the bale compared to 25 or more for twine. This difference improves productivity by reducing time lost to wrapping, and leaf loss is reduced as well. It's the leaves that form the thatch that help shed water, so when leaves are lost during wrapping, more weathering losses occur during storage. Although uncommon, some producers wrap dry hay with a few layers of plastic stretch film using a bale wrapper. Bale conservation is improved because precipitation can't reach the bale, but wrapping in film adds costs. Also, moisture often condenses at the interface between the bale and plastic, causing mold and algae growth.

Consumption of hay wrapped and stored in three ways, averaged across the five preference trials

Comparisons*		Number of periods first treatment preferred over second (18 total periods)	Fraction of treatment consumed within pairing (% of DM fed)	
First	Second		1st Treatment	2nd Treatment
BF*	NWO*	15 or 83%	65	31
BF*	NWI*	9 or 50%	49	42
NWI*	NWO*	13 or 72%	62	37

*BF: bales wrapped with breathable film and stored outdoors; NWI: bales wrapped with net and stored indoors; NWO: bales wrapped with net and stored outdoors.
(Data for this table was extracted from "Cattle preference for hay from round bales with different wrap-types," from the *Professional Animal Scientist* Volume 29, pages 665 to 670.

A new "breathable film" bale wrap known as "B-Wrap" has recently been introduced to overcome these deficiencies. The breathable film is applied at baling and is designed to not only shed precipitation, but allow water vapor to escape from the bale through microscopic pores. The ability for water vapor to escape eliminates the condensation problems associated with plastic film, and because the material is applied at the baler, the cost of wrapping dry hay with plastic film is eliminated.

Our research has shown that bales wrapped with the breathable film reduced losses during storage. For instance, alfalfa bales stored for 10 months in Wisconsin experienced losses of 1 to 3 percent, 2 to 3 percent and 7 to 12 percent of dry matter for indoor, breathable film and net wrapped bales, respectively. Because net wrap and breathable film shed water so well, placing bales on a well-drained surface will reduce damage to the bottom of the bale (see figure).

Preference trials

A hay loss that is often overlooked occurs when animals refuse to eat weathered hay. We investigated how different ways to wrap alfalfa hay might affect refusal losses from beef animals. Bales of alfalfa were stored indoors, outdoors with net wrap or outdoors with breathable film wrap. Bales were stored for 10 months and then tub ground before feeding. We quantified hay preference by (a) the number of times one hay was preferred over another and (b) the amount of each hay that was consumed across the entire trial.

Hay wrapped with breathable film was preferred over net wrapped hay stored outdoors in all five trials. Cattle chose to consume hay from bales with breathable film 15 times out of 18 or 83 percent of possible pairings, and they consumed almost twice as much of this hay when paired with outdoor stored hay (see table). Preference of hay from breathable film bales did not differ from that stored indoors. This study published in the Professional Animal Scientist showed that, when bales are stored outdoors, beef cattle strongly preferred hay conserved with breathable film compared to net wrapped hay, which might result in less hay lost to rejection at feeding.

Moisture profile (scale on right) of alfalfa bales stored outdoors for 10 months in Wisconsin. New wrapped bales stored on soil (left) or on a rock pad (middle); and bales wrapped with breathable film stored on a rock pad (right).

There is no one right way to wrap and store round bales. Producers in arid climates baling grass hay that thatches well may find that twine wrap is an economical option. Breathable film costs an additional $5 per bale beyond net wrap, so it may not be the right choice for low quality hay or bales that will be consumed shortly after baling. But good-quality hay that will be stored outdoors for several months or longer can be wrapped with breathable film and benefit from better storage conservation, and potentially reduced feeding losses and improved animal intake that will help offset its added cost.

Dr. Kevin J. Shinners, Univ. of Wisconsin-Madison

2016 Hay Show Summary

The visual appearance of the entries showed a wide variation in both leaf content and color, with some samples having excellent visual characteristics and others having bleaching from the sun and a low leaf-to-stem ratio. Averaged across all entries, relative feed value (RFV) was 103, up 3 points from 2015.

Comparing averages over the past 6 years of the hay show (Table 1), you can see average crude protein was lower for this year compared to 2015; however, ADF and NDF was also lower, bringing the average RFV up a few points from last year. Champion averages for the three sections are summarized in Table 2. In all, champion qualities were better in 2016 than 2015, with CP being greater, ADF and NDF lower, and a higher RFV value in 2016. Differences between the average for all entries and champions show the potential improvement in forage quality that could be achieved by adopting hay making practices of the champions.

Table 1. Summary of PFGC Hay Show at Ag Progress Days. Values are average of all entries.

Year	% Crude Protein	% ADF	% NDF	RFV
2011	13.7	35.6	56.7	104
2012	13.3	34.4	52.5	113
2013	15.7	38.4	55.8	102
2014	14.7	36.9	55.7	103
2015	14.7	38.2	56.6	100
2016	14.1	37.7	55.4	103
Average	14.4	36.9	55.5	104

Table 2. Summary of PFGC Hay Show Champions at Ag Progress Days. Values are average of entries that were judged to be Division Champion.

Year	% Crude Protein	% ADF	% NDF	RFV
2011	19.7	32.3	44.2	135
2012	17.6	29.3	40.4	154
2013	21.4	32.9	44.5	134
2014	19.2	31.6	42.0	143
2015	21.7	33.7	47.2	124
2016	22.6	32.4	41.9	141
Average	20.4	32.0	43.4	138

Fall Pasture & Grazing Management

Fall pasture growth often provides additional opportunity for grazing livestock; however, careful management of pastures is essential for the over-wintering of forages and improvement into the next growing season. A dry summer has stunted fall pasture regrowth dramatically, but as rains begin to increase in frequency in most regions, fall grazing is beginning to look a little more promising, but could be detrimental to your forage stand if not managed carefully.

During the fall, perennial forages in established pastures are experiencing the development of new shoots – which gives us the accumulated forage to graze – as well as root regeneration. During the period of root regeneration, carbohydrates are being stored as an essential part of the root rebuilding process, which provides the necessary stores for proper over-wintering. These carbohydrates are stored within the crown and roots of the plant, which is generally in the lower 3-4 inches of the plant in cool season perennial pastures, so it is critical that pastures are never grazed below a 3-4 inch stubble height at any point in the season, but *especially during the fall*. It is often recommended to leave a higher stubble height – often 4-5" – in the fall to give pastures a chance to store those carbohydrates that will give them a "jump start" the following spring. If plants are grazed below the growing point, nutrient stores will be depleted and the "protection" from stress will be dramatically reduced. Overgrazing during the fall inhibits regeneration of the root system and the development of new shoots for the next season's growth. Implementing a rotational or strip grazing system can help to manage grazing height by reducing paddock size and increasing the ability to monitor plant residue height.

Early fall is a great time to apply nutrients such as lime, potassium, and phosphorus, as this aids in root regeneration and regrowth. Soil tests should be completed, and if pH is below the recommended level for the targeted forage species within that pasture, liming at the recommended rate to improve soil neutrality will help with forage growth and competitiveness with weeds. If moisture is available, pastures will respond to a fall nitrogen application and lower rates of fall-applied nitrogen will not negatively affect legume population within pastures. However, pasture plants' response to nitrogen is directly correlated with the amount of moisture available, fertilizer application date, and rate of application. It is generally recommended that for cool season mixed species pastures, no more than 40 lb of N per acre should be applied in the fall of the year. High rates of nitrogen application could lead to winter kill. If a fall application of fertilizer is desired, it should be applied before the first to middle part of October.

Jessica Williamson, Penn State

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Few Differences Among Grass Drying Rates

Researchers at the U.S. Dairy Forage Research Center in Madison, Wis., compared the drying rates of three cool-season grass species to determine if there were differences. Meadow fescue, orchardgrass and reed canarygrass were cut and swathed once the heading stage was reached in early June 2011 and 2012. Moisture, drying rate and nutritive value were measured over time. The study was reported in the electronic journal, *Forage and Grazinglands*, and the results are summarized as follows:

- Drying rates among the three species were very similar, though daily differences sometimes occurred.
- Initial moisture of the grass at cutting had a greater impact on final moisture content than did species.
- Though orchardgrass was 10 percent wetter than meadow fescue for initial moisture content in 2012, final moisture at the end of the third day was similar.
- Forage quality was generally similar among the three grass species, though in 2011 reed canarygrass was significantly higher in crude protein (12.6 percent) than meadow fescue (10.5 percent). Also in 2011, meadow fescue had significantly lower NDF and higher NDF digestibility than the other two species.
- Swath width and conditioning appear to be the most important drivers influencing grass dry-down rate regardless of species.

Hay & Forage Grower

Save the Date for the Forage Conference!
Wednesday, February 22, 2017

PFGC Officers and Board

The following is a list of the current officers and Board of Directors of the PFGC. If you have questions, concerns or suggestions on how the PFGC could serve you better, please contact one of these people.

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President	Lamar Bomberger	(570) 412-6867
Vice President	Andrew Frankenfield	(610) 489-4315
Executive Director	Richard Hann	(717) 832-0127
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