



FORAGE NEWS

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28TH KENTUCKY ALFALFA CONFERENCE

Although “ice” reduced attendance by two-thirds, we had a great program. Proceedings from the Conference are on our website at <http://www.uky.edu/Ag/Forage/28th%20Kyalproc%20with%20cover%20plus.pdf>. You can also see photo highlights at <http://www.uky.edu/Ag/Forage/ProceedingsPage.htm>.

BREEDING BETTER ALFALFA

Low-lignin and tannin-containing alfalfas are just two examples of alfalfas being developed using biotechnology along with traditional plant breeding methods, said Joe Bouton, director of the Forage Improvement Division of the Samuel Roberts Noble Foundation, Ardmore, OK. He spoke at the National Alfalfa Symposium last month.

Low-lignin alfalfa has been estimated to produce a 10% increase in fiber digestibility that could increase milk or beef production by \$350 million/year and decrease manure production by 2.8 million tons/year, according to U.S. Dairy Forage Research Center (USDfrc) studies. New varieties with this trait may be commercially available to seed producers in 2012.

Tannin alfalfa, now in an early stage of development, could reduce bypass protein problems and cause less bloating in animals. It could reduce protein feed supplementation by 60% and nitrogen losses by 25%, bring up to a 12% increase in net return for dairies and increase alfalfa silage value by \$23/ton, according to a USDfrc dairy model.

For more on Bouton's presentation, visit: hayandforage.com/alfalfasyposium/coverage/biotechnology-delivers-better-alfalfa/. For recaps of other symposium talks, visit: hayandforage.com/alfalfasyposium/coverage/. (SOURCE: *e-Hay Weekly March 4, 2008*)

HAY PRESERVATIVES: PROPIONIC ACID AND MICROBIAL INOCULANTS

Various hay preservatives inhibit mold and may be useful in reducing drying time and field losses by allowing baling at higher moisture levels. If properly done, baling at higher moisture levels can reduce dry matter loss (from leaf shattering) and potential damage from rain. The two most commonly used preservatives for high moisture hay are propionic acid-based solutions and bacterial inoculants.

Propionic acid is effective in inhibiting growth of molds, yeast and bacteria in hay. In recent years, there has been much interest in “buffered” propionic acid mixes that have a pH of about 5.5 to 6. These products are based on ammonium or sodium salts of propionic acid and are as effective as unbuffered acid in preserving the quality of moist alfalfa hay (about 25% moisture). In one study, significant improvements in nutrient yield were found when a buffered propionic acid product was added, however, the improvements were not large enough to pay for the preservative.

In order for propionic acid to be effective, correct levels must be used (Table 1). Note that these are values for a 100% propionic acid solution. In the market, solutions will vary from 10 to 100% propionic

acid. The use of very dilute products are not recommended because larger volumes of water are applied to the crop. (Why add more water to your hay?) Uniform distribution of propionic acid is important since “pocketing” of molds has been observed (only parts of the bale being moldy). Depending on the product and application rate, it will cost \$5 to 20/ton of hay to treat with propionic acid-based products.

% moisture	% propionic acid ¹ /wet forage suggested levels
20-25	0.5 – 0.9% (10 lb/ton)
26-30	1.0 – 1.13% (20 lb/ton)
¹ 100% propionic acid equivalent	

Microbial inoculants can improve silage fermentation and animal performance. Because of this success, there has been a lot of interest in using microbial inoculants to reduce spoilage in moist hay. However, the success of microbial inoculants in hay are inconclusive. One report showed that addition of a bacteria inoculant called *Bacillus pumilus* to moist hay improved color, odor and other visual assessments but had no effect on chemical composition of the hay. Over several years, researchers at the USDA Dairy Forage Center, Madison, Wisconsin, have never seen a positive response from any hay inoculant. In addition, University of Delaware research with a variety of microbial inoculation has shown no response on high moisture hay. (SOURCE: *Limin Kung, Univ. of Delaware IN Pennsylvania Forage & Grassland News, Vol. 17, #3, Summer 2007*)

ALTERNATIVE ENERGY: DOES IT MAKE SENSE?

Many of you may be asking the question “Does alternative energy make sense for Kentucky farmers?” The Kentucky Forage and Grassland Association, the University of Kentucky Cooperative Extension, and Maysville Community College recently sponsored a special symposium to help answer this question. Speakers from UK and industry spoke on worldwide trends and the potential for growing and utilizing biomass crops in Kentucky. Biomass crops include traditional forage crops, native perennial grasses like switchgrass, crop residues, forestry byproducts, and others.

Dr. Ray Smith from UK provided a national and international perspective on the emerging biomass industry and on the KFGC/UK Biomass Project in NE Kentucky. John Seymour, from Roundstone Native Seeds, discussed what's required to establish switchgrass in Kentucky. Tom Keene, UK Hay Marketing Specialist, provided an overview of biomass storage, processing, and transportation. Dr. Czar Crofcheck, from UK Biosystems and Ag Engineering outlined the current conversion technologies being developed to convert grass crops to energy. Dr. Chad Lee, UK Grains Extension Specialist told the audience about the opportunities and cost of removing crop residue. Dr. Sam McNeill, UK Post-harvest Extension Specialist, overviewed the entire process of utilizing biomass crops. Jim Shipp, Plant Manager at the East Kentucky Power plant in Maysville, provided an optimistic picture of the potential for burning biomass for electricity production. Mark Coffman from Alltech outlined his company's vision of developing

of Rural Community Integrated Biorefineries like the new ethanol production plant they are constructing in Springfield, KY.

All speakers agreed that biomass crops will likely become an important part of the energy balance in the U.S. in coming years. We will continue to organize events like this one to update Kentucky producers on the production and utilization of biomass crops as alternative energy sources.

HIGH PRICED NITROGEN: CAN I STILL AFFORD TO FERTILIZE GRASS HAY

Nitrogen prices continue to increase with the high cost of natural gas and worldwide demand. Many of you are asking "Can I afford to fertilize grass hay fields." Since nitrogen is essential for plant growth, then a better question is how much N should I apply. Results from UK research show that tall fescue and orchardgrass will respond to 100 lbs of March applied nitrogen, but this same research indicates that the greatest response comes from the first 40 to 50 lbs. For example, 40 lbs of N applied in mid-March will produce 55 lbs of tall fescue hay by mid-May for each lb of nitrogen added. Adding 40 lbs more (total of 80) only adds 16 lbs of additional hay per lb of nitrogen. If cutting is delayed until June, N use efficiency will be higher.

Our advice, for pure grass hay stands make sure to apply nitrogen. At least 40 lbs is recommended even with N prices at record levels. If cutting is delayed until June then 50 to 60 lbs probably makes sense. Grass hay yields will continue to increase up to about 100 lbs N, but the efficiency of N use drops at higher rates. Also remember that grass stands show good response to N when applied in the late summer for fall growth.

Don't forget that each ton of grass hay removes approximately 12 lb of P and 50 lb of K, so unless your soil test report is in the high-medium to high range, applications of these nutrients based on soil test recommendations are important. If your field has greater than 25% clover UK does not recommend additional nitrogen. If you seeded clover into a grass hay field or pasture this spring, then nitrogen will increase grass growth, but will cause competition to the new clover seedlings.

For more details on deciding nitrogen rate based on the cost of nitrogen compared to the value of hay go to the forage website and see the new UK publication "Profitability of Spring Hayfield Nitrogen Applications" AEC 2008-02.

FORAGES MAY FUEL PELLET STOVES

Fuel for the fast-growing pellet-stove industry is in short supply, and forages could help fill the void, believes Jerry Cherney, Cornell University agronomist. He points out that a dwindling supply of sawdust has created a scarcity of wood pellets, and corn, the other traditional pellet-stove fuel, has gotten expensive. In five years of work with grass pellets, Cherney has found that they compare favorably with other types of pellets. He says grass pellets have 96% of the Btus of high-quality wood pellets and emit up to 90% less greenhouse gas. He's burned pellets made from timothy, orchardgrass, goldenrod, switchgrass, reed canarygrass and wheat and barley straw.

But grass pellets have a higher ash content than wood pellets or corn, and create clinkers (hard chunks of debris) that are difficult to remove from stoves. Pellet stoves would have to be modified to accommodate them, and stove manufacturers are showing a willingness to do that, says Cherney.

For more on his research, and the latest on a Missouri cooperative building a \$6.6 million facility to make pellets from low-quality hay and other forages, watch for the March issue of Hay & Forage Grower. (SOURCE: *e-Hay Weekly March 4, 2008*)

WEED MANAGEMENT OPTIONS IN THE SPRING FOLLOWING A DRY SUMMER

Abnormal dry weather conditions during the 2007 growing season and the wet fall and winter months have resulted in grazed pastures and grass hay fields with areas that have bare soil and thin vegetative cover. Fields with thin stands of desirable pasture species are more likely to contain winter annual weeds such as chickweed, henbit, purple deadnettle, and mustard species. As these cool-season weeds die back, warm-season weeds will emerge and take their place. Other weeds such as buttercup and musk thistle are also likely to be more prevalent this spring. Broadleaf pasture herbicides such as 2,4-D will aid control of buttercup and musk thistle; however, 2,4-D alone is not very effective for control of chickweed. Therefore other labeled herbicide options should be considered.

The first step in determining weed management options is to do a critical evaluation of pasture fields in the early spring. Scout fields

looking for any developing weed problems. Identify areas of the field with potential problems such as biennial thistles, poison hemlock, buttercup, chickweed, or spring mustard species. Also, assess the growth of desirable forage grasses and legumes.

The primary question then becomes – does the existing stand of desirable forages appear to be healthy and potentially competitive against any emerging weed problems? If the forage stand is acceptable and weed pressure is light, then the best course of action is likely to do nothing this spring except other routine pasture management practices. However, if you do see developing weed problems then you may want to take action in early spring to begin to correct these problems. In some cases there may not be any good solutions that will correct all weed problems observed. Highlighted below are some points to consider as you make those decisions.

After evaluating the field, you must decide whether or not to 1) overseed or drill more forages into an existing pasture to improve the stand of desirable forage grasses or 2) spray to control emerging broadleaf weeds. You will not be able to do both practices in the spring since most broadleaf herbicides have the potential to injure newly emerging forage grasses and legumes. For most broadleaf pasture herbicides such as 2,4-D it is generally recommended to wait 4 to 6 weeks after spraying before reseeding forage crops. Other broadleaf herbicides may require a 6 month waiting period between application and seeding forage legumes and grasses (consult the label of specific herbicide products used). As a rule of thumb, if you decide to spray this spring you will need to wait until late summer or fall before seeding additional forages. If you reseed first, then it is recommended that you wait until the new seedlings have become well established before making a herbicide application this summer. It is important to also note that broadleaf type herbicides cannot be used in fields where clovers or other legumes have been seeded.

Another alternative to consider is the use of a pasture renovation technique to control or suppress growth of the weedy vegetation followed by interseeding more forage grasses or legumes. This assumes that the field is not needed for grazing animals until the newly seeded forages become well established. In this approach a herbicide product containing paraquat (eg. Gramoxone Inteon) is applied to kill back winter annual weeds. Leaves of actively growing forage grasses will also be "burned back" by the paraquat application, but established plants are not likely to be killed. Desirable forage grasses and legumes which have a good root system should regrow and resume active growth within a few days after treatment. Since paraquat has no soil-residual activity, desirable forages can be interseeded into the soil immediately after herbicide application. Paraquat is a "Restricted Use" pesticide, only licensed and certified applicators are allowed to purchase and apply it. Weedy plants such as curly dock, chicory, or Canada thistle with perennial roots or other weeds with established taproots (such as musk thistle) will likely survive this treatment.

Another course of action is a "wait and see" approach. But, keep in mind that smaller weeds are easier to control than after they increase in size. Specific details on herbicides labeled for use on grazed pastures and hay fields and their effectiveness on target weed species can be obtained in the University of Kentucky Extension bulletin, Weed Management in Grass Pastures, Hayfields, and Fencerows (AGR-172) available at <http://www.ca.uky.edu/agc/pubs/agr/agr172/agr172.pdf>. (SOURCE: J. D. Green, UK Extension Weed Scientist)

UPCOMING EVENTS

- JUN 12 UK Farm Field Day, Spindletop Farm, Lexington
- SEP 4 KFGC Field Day, Christian County
- SEP 25 2008 All Commodity Field Day, UK Robinson Station, Jackson
- OCT 23 9th Kentucky Grazing Conference, Fayette County Extension Office, Lexington

2009

- FEB 19 29th Kentucky Alfalfa Conference, Cave City Convention Center



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