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## Forage News [2006-07]

University of Kentucky Department of Plant and Soil Sciences

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# FORAGE NEWS

For more forage information, visit our UK Forage Extension Website at: <http://www.uky.edu/Ag/Forage>

**JULY 2006**

*Garry D. Lacefield and S. Ray Smith, Extension Forage Specialists • Christi Forsythe, Secretary*

## **DETERMINING FORAGE MOISTURE CONTENT USING A MICROWAVE OVEN**

1. Chop fresh forage into 1 to 2 inch lengths for ease of handling.
2. Weigh out approximately 100 grams (3.5 ounces) of chopped forage.
3. Spread forage thinly on a microwave-safe dish and place into microwave. **(Place a cup of water in the microwave to prevent sample from igniting once dry.)**
4. Heat for 2 minutes and reweigh.
  - a) If forage is not completely dry, reheat for 30 seconds and reweigh. (Microwaves vary considerably in drying capacity. It is better to dry for short intervals and reweigh until the last two weights are constant, than to overdry and run the risk of burning and damage to oven.) Continue this process until back-to-back weights are the same or charring occurs.
  - b) If charring occurs, use the previous weight.
5. Calculate moisture content using the following equation:  
$$\% \text{ Moisture Content} = \frac{W1 - W2}{W1} \times 100$$

W1 = weight of forage before heating  
W2 = weight of forage after heating  
Dry matter (DM) is the percentage of forage that is not water.  
DM equals 100% minus percent water.

Results on an "as-fed basis" reflect total nutrient concentration including water of sample analyzed or to be fed.

(SOURCE: *Southern Forages 3<sup>rd</sup> Edition, Page 303*)

## **KFGC FIELD DAY**

The Kentucky Forage and Grassland Council Field Day will be held on September 12, 2006 at the Shady Meadows Farm (Gene and Marcy Dobbs) in Campbell County, KY. The theme for this year's field day is "Maximizing Farm Productivity and Profitability by Implementing Sound Grazing, Livestock and Conservation Practices." The field day will begin at 4:00 p.m. with a short welcome and farm overview followed by three farm tour stops from 4:15 p.m. to 5:45 p.m. From 5:45 to 6:30 you will enjoy a "sirloin burger" meal cooked and served by the Campbell County Cattle Association. After dinner the field day will continue with 3 more tour stops from 6:30 to 8:00 p.m. Tour stops will include:

Topic	Speaker
1. Renovating Pastures with Legumes	Dr. Ray Smith
2. Fencing and Watering Options for Rotational Grazing	Mr. Kevin Laurent
3. Extending the Grazing System Using Stockpiled Fescue and Alternative Forages	Mr. Don Sorrell
4. Managing a Rotational Grazing System	Dr. Garry Lacefield
5. Beef Cattle Management Practices that Work	Mr. Gene Dobbs
6. Conservation Practices at Shady Meadows Farm	Mr. Ed Thompson

This field day will also feature the following demonstrations/plots: Max Q fescue/clover, fencing and watering, pasture renovation options and nitrogen sources/rates for stockpiling fescue. The KY Department of Agriculture's mobile hay testing lab will be on hand to test hay samples at no charge.

For more details and a map to the farm, see our website [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage)

## **KENTUCKY: DID YOU KNOW**

Did you know that Kentucky has over 25 million acres and a population of over 4 million? There are over 84,000 farms and Kentucky ranks 4<sup>th</sup> nationally in farm numbers. There is almost 14 million acres of land in farms and the average farm size is 164 acres. Cash receipts this past year was over 4 billion dollars with crops contributing 1.39 and livestock contributing 2.7 million, respectively. The top five agriculture counties in order are Woodford, Fayette, Graves, Bourbon, and Webster. (SOURCE: *Kentucky Agricultural Facts, March 2006.*)

## **KFGC AWARDS PROGRAM**

Nominations are now being accepted for all KFGC Awards including: Producer, Industry and Public (State and County). The awards will be presented at the 7<sup>th</sup> Kentucky Grazing Conference in Lexington on November 21, 2006. A list of previous award winners is available at [www.uky.edu/Ag/Forage](http://www.uky.edu/Ag/Forage) go directly to KFGC Award History.

If you want to nominate a deserving individual, send a one page nomination to Garry Lacefield, Research & Education Center, P.O. Box 469, Princeton, KY 42445 or by e-mail to [glacefie@uky.edu](mailto:glacefie@uky.edu).

## **FORAGE SPOKESMAN NOMINATIONS**

The Kentucky Forage & Grassland Council is now accepting nominations for the Forage Spokesman Contest to be held during the 7<sup>th</sup> Kentucky Grazing Conference in Lexington on November 21, 2006. Mr. Bill Payne from Lincoln County is our reigning Kentucky winner and also the national AFGC Forage Spokesman. Kentucky has more National Forage Spokesman winners than any other state.

If you would like to nominate a producer who has an outstanding forage program and who would be willing to share his/her experiences, please send a one-page nomination to Dr. Ray Smith, Plant & Soil Science Dept., 105 Plant Science Bldg., 1405 Veterans Road, University of Kentucky, Lexington, KY 40546-0312 or e-mail at [raysmith1@uky.edu](mailto:raysmith1@uky.edu). If you have any questions, feel free to contact us.

## HAY STORAGE DEMONSTRATION FARM PROJECT EVALUATING IMPACT OF INDOOR STORAGE

Kentucky farmers must choose a hay storage option that best suits their budget, available resources, and hay quality needs. Significant reductions in quality and dry matter are likely for round hay bales stored in unsuitable conditions. Weathering and absorption of water from the ground causes deterioration of the bale's outer layers reducing the nutritional quality and appeal for livestock. Researchers from the Plant and Soil Science and the Biosystems and Agricultural Engineering Departments are conducting a project to determine quality losses for hay bales stored inside and outside. Four producers from Fleming, Caldwell, Anderson, and Pulaski counties are participating in the study as well as UK's Eden Shale farm, the Western Kentucky Research and Education Center, and Spindletop farm. Immediately following the first cutting, three bales of hay were assigned at each location to be stored inside on pallets and three bales were placed outside in a well-drained location. Core samples were collected when hay was stored and will again be collected after three and six months in storage. Rainfall and temperature data will be collected throughout the storage period. The purpose of this project is to quantify the impact of hay storage structures funded in part by the Hay, Straw, & Commodity Storage Program of the Kentucky Ag Development Board. Upon completion of this project, data will be available to demonstrate the benefits of good hay storage choices and enable producers to select the best method of storage for their farm and budget. (SOURCE: Erin Wilkerson, UK Extension Professor, Biosystems & Agricultural Engineering)

## AGROTAIN REDUCES AMMONIA LOSS FROM SURFACE-APPLIED UREA

Urea is the world's leading N fertilizer, and its use continues to grow. In Kentucky, urea accounted for 43% of the N used in 2004. The increasing popularity of urea is due to advantages over other N fertilizers in its manufacture and to its use in making most N solutions, another rapidly growing form of N fertilizer. Desirable qualities of urea include the highest N content of all solid N fertilizers (46%), excellent handling properties, and dissolves readily in water. There is however, a serious agronomic management problem with urea.

**The Management Problem with Urea** – The most important management problem associated with urea is its tendency to lose N by ammonia volatilization when surface-applied. When urea [(NH<sub>2</sub>)<sub>2</sub>CO] is applied, it reacts with water and becomes ammonium carbonate [(NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>] by the process of hydrolysis. Ammonium carbonate is unstable and some of it breaks down releasing ammonia gas (NH<sub>3</sub>). If urea is surface-applied and not incorporated into the soil by tillage, rainfall, or irrigation, a substantial amount of its N can be lost during the hydrolysis process, which is usually complete in 4 to 7 days after application. Large N losses have been reported, but ordinarily losses are within the range of 5 to 20%.

**A possible Solution to the Problem** – For urea hydrolysis and ammonia volatilization to occur, the enzyme urease must be present and active. Urease is normally abundant on the surfaces of soil, living vegetation, and plant residues, as well as in the soil. If the activity of urease could be inhibited long enough for the urea to be washed into the soil by rainfall, the efficiency of the urea should be improved. On this premise, chemicals that inhibit the activity of urease have been tested widely. One such chemical, N-(n-butyl) thiophosphoric triamide (Agrotain), manufactured by Agrotain International has been studied for 5 years at the U.K. Research and Education Center at Princeton, KY.

**Results of U.K. Research on Agrotain** – Yields of fescue were measured in field experiments where prilled urea and urea-ammonium nitrate solution (UAN) with and without AGROTAIN were compared to ammonium nitrate (AN). Previous research shows that no ammonia volatilization occurs from ammonium nitrate under the conditions of our experiments.

**Fescue.** Dry matter yield of fescue fertilized with urea without Agrotain was 13% lower than fescue fertilized with ammonium

nitrate (Table 1), indicating a significant loss of N from the urea. Yield with urea + Agrotain was almost identical to that obtained with ammonium nitrate and was 13% greater than for urea without Agrotain. The fescue yield response to Agrotain with UAN solution was only 3%.

**Table 1. Dry matter yields of fescue as affected by N source and urease inhibitor (Agrotain).**

N treatments	Fescue yields†	
	% of AN	ton/ac
Check (No N)	43	1.04
AN	100	2.43
Urea	87	2.12
Urea + Agrotain§	99	2.40
UAN	84	2.04
UAN + Agrotain	87	2.11

†Sum of two cuttings per year with 70 lb N/ac/cutting averaged over 5 yr.

§Agrotain rate = 0.70 lb/ac/cutting for fescue.

**Summary** – The Agrotain effectively inhibited urease activity and decreased N loss by ammonia volatilization from urea. It appears that Agrotain clearly has the potential to increase the efficiency of surface-applied solid urea on pastures and hay crops, but it has not had a consistent effect with UAN. (SOURCE: L.W. Murdock, UK Extension Soils Specialist)

## GRAZING CORN

Producers know that grazing is the cheapest method of feeding cattle. Corn is not a crop typically grazed by cattle. However, grazing corn does have the potential to fit in several areas.

Grazing corn is an excellent option when a pasture needs to be renovated. In these situations, herbicides can be used to remove the existing pasture and weeds. The corn crop can be grazed and the new pasture can be established the following year.

Grazing corn can serve as an insurance crop in an overall grazing system. The hot, dry summer will slow the growth of fescue pastures. Cattle can be moved off of these pastures and onto corn. Producers need to check for nitrate accumulation if the corn crop is under drought stress. By keeping the cattle on the corn and off the fescue, the fescue will have a better chance of recovering for fall grazing.

Grazing mature standing corn during December and January can extend the winter grazing season. Mature standing corn is an excellent feed source for open cows. Studies have shown similar rates of gain for stockers on commodity feed versus grazing mature corn.

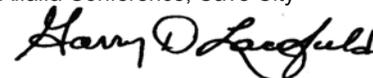
Successful corn grazing requires good corn yields to maintain stocking capacity. Corn should be managed similar to corn grown for grain. Selection of a good hybrid, proper seeding rates, timely planting and judicious use of pesticides and fertilizers are all necessary for grazing corn. If you are not familiar with raising corn, then talk to experienced farmers in your area and to your county extension agent. (Source: Chad Lee and David Ditsch, University of Kentucky)

## UPCOMING EVENTS

- SEP 12 KFGC Field Day, Dobbs Shady Meadow Farm, Campbell County
- SEP 28 UK College of Ag Field Day, Robinson Station
- NOV 21 Kentucky Grazing Conference, Lexington
- DEC 10-13 Third National Conference on Grazing Lands, St. Louis, MO

### 2007

- JAN 11-13 KCA Annual Convention & Trade Show, Lexington
- JAN 24-25 Heart of America Grazing Conference, Mt. Vernon, IL
- FEB 22 27<sup>th</sup> Kentucky Alfalfa Conference, Cave City



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July 2006