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Contents

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Comparison of Traditional and Nontraditional Fertilizers for Bermudagrass Forage Yield

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Fertilizer prices have more than doubled over the past year, causing many producers to look for fertilizer alternatives to reduce costs. Producers involved with organic agriculture also need an alternative to commercial fertilizer products. Many new fertilizer products are being marketed, but little information is available to show the effectiveness of these products. The objective of this study was to compare three nontraditional fertilizers with urea, ammonium nitrate and liquid UAN (urea ammonia nitrate) for effect on bermudagrass dry matter yield.

Fertilizer treatments were applied to 10' x 25' plots in a bermudagrass hay meadow on 6/27/08, and plots were harvested on 7/28/08. Rain occurred the day after fertilizer treatments were applied. Treatments were ammonium nitrate, urea, liquid UAN, Monty's Plant Food (analysis 8-16-8), Monty's plus urea, Sea 90 Mineral (analysis available at http://www.seaagri.com/), Sea 90 plus urea, Fish Emulsion (analysis 5-1-1) and Fish Emulsion plus urea. All treatments were replicated four times. The traditional fertilizer products urea, UAN and ammonium nitrate were applied at 75 lb/acre of N. The nontraditional fertilizer products were applied alone at labeled recommended rates and in combination with urea at 75 lb/acre N. Fish emulsion was foliar applied at 4 gallons/acre; Sea 90 Mineral was foliar applied at 2 lb/acre; and Monty's Plant Food was foliar applied at 1.5 pints per acre. All plots received P and K according to soil test recommendations for bermudagrass hay at a 4 ton/acre yield goal. Results are presented in Table 1.

Bermudagrass dry matter yield was significantly increased by application of N as ammonium nitrate. urea and UAN compared to the untreated check treatment (Table 1). According to University of Arkansas soil test recommendations, a rate of 50 lb/acre of N is recommended per ton of bermudagrass dry matter yield, which would be equivalent to 75 lb/acre N for 3,000 lb dry matter yield. Results of this study support that recommendation since dry matter yield for ammonium nitrate was 3,229 lb/acre for 75 lb/acre of N. Urea and UAN were not different than ammonium nitrate, yielding only 10% less dry matter than ammonium nitrate. Dry matter yield for Monty's Plant Food, Sea 90 Mineral or Fish Emulsion alone was not different than the check (no fertilizer) treatment. Label recommendations suggest application of each of these three nontraditional fertilizers in addition to the normal fertilizer program. In this study, addition of these products with 75 lb/acre urea did not increase dry matter yield over urea alone. The

urea/fish emulsion combination yielded statistically less (19%) than ammonium nitrate, but the reason for this difference is not known.

Summary: Data are from one harvest in one year so conclusions are preliminary. However, results suggest minimal benefit for bermudagrass dry matter yield from the nontraditional fertilizers used in this study. UAN, urea and ammonium nitrate were similar for bermudagrass yield.

(**Editor's Note:** Poultry litter has provided less expensive fertilizer for some than conventional fertilizer. However, it is necessary to consider the shipping costs, first year availability of nutrients, and costs of application when purchasing litter.)

Table 1. Comparison of traditional and nontraditional fertilizers for bermudagrass yield. Treatments applied on 6/27/08 – plots harvested on 7/28/08.

Treatment	Dry Matter Yield (lbs/a)*
Ammonium Nitrate	3,229 A
Urea + Monty's Plant Food	2,919 AB
Urea + Sea 90 Mineral	2,913 AB
UAN	2,877 AB
Urea	2,872 AB
Urea + Fish Emulsion	2,619 B
Fish Emulsion	965 C
Monty's Plant Food	928 C
Sea 90 Mineral	847 C
Untreated Check	745 C

*Treatments followed by the same letter are not significantly different at the 0.05 level.

Effects of Mud on Your Dairy Cows

Dr. Donald E. Pritchard, NCSU Extension Dairy Specialist, and
Jodie Pennington, University of Arkansas Extension Dairy Specialist

In past years, dry weather has been more of a problem than wet weather. However, the recent rains have caused significant mud problems for some producers. Mud in your pastures or loafing areas adds stress to cows. This stress can depress feed intake and reduce feed efficiency, which can lead to upset stomachs and increased incidence of clinical mastitis.

John Kirk, retired extension veterinarian from the University of California, Davis, reports on the effects of mud on feedlot cattle, and this data is probably applicable to dairy cows. Here are some of his findings:

- 4-8 inches of mud can decrease feed intake by 4 to 8 percent.
- 4-8 inches of mud can slow gains by 14 percent.
- 4-8 inches of mud can reduce feed efficiency by 13 percent.
- "Belly-deep mud" can reduce feed intake by 30 percent.
- "Belly-deep mud" can reduce feed efficiency by up to 25 percent.

The slippery mud surfaces also led to increased risk of injury. Besides the difficulties mud poses for the cattle, it can also be a hazard for the pen workers. Excessively muddy corrals make it more difficult for the pen workers to detect sick cattle. Injuries are more common in both cattle and the handlers in wet conditions.

The wet weather also contributes to an increase in mastitis as the mud contains greater pathogens and more are exposed to the teat end as cows lay in the mud. Usually then, the somatic cell count for bulk tank milk increases, and milking sanitation becomes more important so that spreading of bacteria from one cow to another is minimized.

To minimize subclinical and clinical mastitis in wet weather, it is critical to keep cows out of the mud as much as possible and to detect any cases of mastitis before mastitis is spread to another cow.

Knowing when a cow has clinical mastitis is usually an easy task – you see and feel the swollen, hot quarter or see the abnormal milk that is expressed from a teat when the cow is being prepped for milking. But how do you monitor/detect subclinical mastitis infections, the kind that you don't see the visible signs of but that could be "robbing" you of hundreds of pounds of milk yearly from each infected cow in your herd?

Unfortunately, many producers don't give enough attention to monitoring/detecting subclinical infections and choose to deal only with the clinical cases when non-saleable milk is produced. Producers should give more attention to the detection of subclinical infections and treat those cases when appropriate, plus change management practices and improve facilities/equipment as needed to reduce the incidence of both subclinical and clinical cases in the herd.

Monitoring the subclinical mastitis status **in a herd should be done at both the herd and individual cow level**. At the herd level, simply reviewing the bulk tank milk somatic cell count score received monthly or more frequently is the first step in knowing how much subclinical infection is in the herd. Scores over 200,000 cells/ml of milk often suggest a significant prevalence of subclinical mastitis in the herd. There are times when only a few highly infected cows can be shedding millions of somatic cells in response to the infections they have and run the bulk tank milk SCC score up. However, if there are only a few mild clinical cases and the bulk tank SCC is high, then there are probably many subclinical infections in the herd that should be dealt with.

Individual cow monitoring for subclinical mastitis infection should also be done. There are several ways of getting SCC or infection data on each cow. Having somatic cell counts run monthly on each cow through the DHIA program is one approach. Doing cow-side SCC monitoring monthly or more frequently is another approach. The long-time used California Mastitis Test kit is an acceptable first line method to use. Several cow-side electronic testing devices are another method that can be used effectively. Some milking systems have the capability to measure electrical conductivity of milk as a way of detecting subclinical infections. And certainly doing milk culturing of individual cows to detect not only infection status but also to know the type of organism causing the infection is another method that some producers use on at least selected or suspected infected cows.

Producers should be monitoring/determining the subclinical infection status of all cows within the first few days after each freshening. Knowing which cows are infected and the extent or degree of the infection by quarter at the very beginning of each lactation gives the producer the ability to treat infections early in the lactation when appropriate and, hopefully, reduce or eliminate the milk loss associated with an udder infection that lactation.

Culturing the milk of infected fresh cows to determine if antibiotic treatment is appropriate and should be part of the detection practice. Producers should discuss early subclinical mastitis detection practices with their veterinarian or other qualified consultant and should implement an early detection program to increase the profitability of the herd.

Review Your Heat Detection Skills

Jodie A. Pennington, Extension Dairy Specialist

Adequate detection of cows in heat is essential if the use of artificial insemination is to be successful. Heat detection requires time but can be used to improve the quality of animals entering the dairy herd.

Know What to Watch For. Learn how cows in heat behave. In general, a cow that stands firmly when ridden is in heat, unless there is some reason to suspect otherwise. Aside from standing, cows in heat may behave quite differently. Some cows are aggressive in both mounting and receiving mounts and stand for a day, while other cows stand to be ridden for only one to two hours. A small percentage of cows may not stand at all. In observing your cows, it is important to watch carefully since a typical mount may last only 5 to 10 seconds.

A ruffled tailhead, mud on the back or sides, a swollen vulva or a clear mucous discharge in the vulva region may indicate a cow in heat. Behavioral changes, such as nervousness, being off feed and seeking another cow's company, are further indications that an animal may be in heat or near heat.

While these other signs can confirm heat detection, they can lead to errors in detection if not accompanied by the best sign – the cow standing firmly to be ridden.

Use Heat Detection Aids. If, after trying the above suggestions, heat detection is not satisfactory, consider using a heat detection aid. The more commonly used heat detection aids include pressure sensitive heat mount detectors and chalk on the tailhead and backbone. However, some mount detectors are computer linked and may provide time and degree of mounting activity, while other mount detectors may change to different colors when activated. Heat mount detectors turn red when an animal is ridden. The chalk is smeared or erased when the animal is ridden.

Although altered heat detection aids may indicate the cow has been ridden, changes do not necessarily mean that she has been in heat. The aids may be altered by other means, such as another cow attempting to ride her or the cow may activate the detector by rubbing on a tree or other item.

When a single heat detection aid is activated, use other signs of heat to confirm that, indeed, a cow is in heat. A combination of heat mount detectors and chalk can be used with much success in reducing errors in detection. However, both aids require daily maintenance in order to be successful.

Although the mount detectors plus chalk improved reproductive performance over other treatments, more time is required for applying and maintaining two heat detection aids. Also, additional money is required to purchase two aids.

Combinations of heat detection aids may be beneficial in decreasing the number of false positives and give a better indication of when a cow is in heat. Although more effort is required, combinations of aids may benefit dairymen having problems detecting cows in heat. They may also solve problems with conception rates of cows detected incorrectly and bred at inappropriate times.

Choice of heat detection aids may depend on the dairy farmer's willingness to allocate time for daily upkeep. Chalk requires at least daily maintenance in humid weather. It stays on the cow better in drier climates. Other heat detection aids are available and may be used with much success under good management. **All aids will yield more reliable data with routine daily maintenance.**

Heat Synchronization. Various hormonal treatments for heifers and cows are now available to aid in getting animals bred. Some schemes for synchronization require heat detection before breeding, and other schemes allow breeding without heat detection. These

methods of heat synchronization require additional costs for purchase of hormones and additional handling of the cattle.

Summary. Know which cows to expect in heat. Set up a schedule of those to watch. Group cows to be bred, if possible. If heat detection is not satisfactory, heat detection aids may be of benefit. However, the best reproductive management program includes frequent observations for mounting and, when necessary, aids and scheduled observations for cows that are difficult to catch. Proper breeding techniques are needed to complement heat detection in getting cows pregnant.

Upcoming Events

September 26-28 – Mid-South Dairy Cattle Show, Memphis, TN

September 30-October 4 – World Dairy Expo, Madison, WI

October 10-18 – Arkansas State Fair, Little Rock (Dairy Cattle Shows, October 12-13; Dairy Goats, October 17-19)

Upcoming Kitchen Meeting (Topics include a summary of the fly project as well as the following: maximizing forages in order to decrease feeding costs, use and economics of nontraditional fertilizers, forage pests or army worms, status of recommendations of the Arkansas Milk Stabilization Board and mastitis control in wet weather.)

October 6 – White Co. Area Dairy Meeting, Beebe

October 15 – Washington Co. Area Dairy Meeting, Country Cafe, Evansville

November 5 – Tri-County Area Dairy Meeting, Center Ridge

Dairy Princesses: The Arkansas Dairy Princesses help promote dairy products and are glad to assist with promotion activities in their area. The 2008 Arkansas Dairy Princess (ages 15-21) is **Brittany Harpole**, daughter of Monte and Stephanie Crawford of El Dorado. The Arkansas Dairy Junior Miss (ages 8-14) is **Katherine (Katie) Kurz**, daughter of Rudy and Terri Kurz of Lonoke. The Little Miss Dairy Princess (ages 3-7) is **Grace Dunlap**, daughter of Clay and Teresa Dunlap of Springfield.

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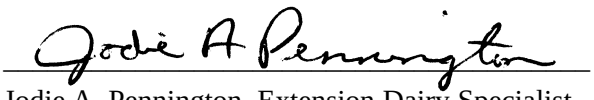

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