

## THE N-TIMES

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Last month, I presented some information on why you shouldn't cut back too much on your fertilizer. This month, I'll continue on this theme, since I know it is one that folks are really stymied by this year. High nitrogen (N) prices give one the feel of gloom and doom, but I encourage you to think of these "N-times" not as the "End Times." It will only be the "End Times" if you fail to be efficient at adapting to the changes. Here are some practices that will make sure you get the most out of your N fertilizer investment.

**Soil Test.** If you aren't soil testing, then that's job # 1. No, your soil samples will not be tested for N, but the soil test reports other fertility issues that impact the effectiveness of the N that is applied. For example, if some other nutrient(s) is too low, you may not be getting the most out of your N fertilizer. In fact, adding more N when N isn't the problem can just make matters worse. This is especially true when it comes to soil pH and potassium (K) management.

**Add what is necessary.** A majority of our pastures and hayfields need lime and/or potassium. In fact, I recently reviewed the UGA lab's database for 1996-2006 and focused on those samples that were from pastures and hayfields. I found that about 55% of those soils would need lime and that a staggering 96% of them required potassium. Pastures and haylands that have a history of poultry litter may be better, but I've seen many that still had low soil pH or K levels.

**Don't add what you don't need.** There are a lot of fertilizer blends (e.g., 10-10-10, 19-19-19, 24-3-2, etc.). If you don't need but one or two nutrients, these fertilizer blends may not be the most economical choice. I also encourage you to be ultra-skeptical of wonder products. We are seeing a resurgence in the number of specialty fertilizers and foliar sprays on the market. These products often make impressive claims, but some do not deliver. Many of these products are effective and economical, if addressing a bona fide nutrient deficiency. Unfortunately, some may leave you hoodooed. Remember, if it sounds too good to be true, it probably isn't.

**Split your N applications on bermudagrass.** If you are using poultry litter, one application in the spring is fine. If you are using commercial N fertilizers, however, you need to split your N applications. Research in Georgia and elsewhere has shown that, over the long-term, splitting N applications (at least into two applications) will increase bermudagrass yields by 1200-2400 lbs/acre AND increase the effectiveness of the N that is applied by 25-30%. This will be more important when there is a high risk of leaching, volatilization, severe drought, or other substantial weather issue. As the value of hay is driven by supply and demand, splitting your N applications also allows you to adjust for high or low demand. As a result, splitting your N applications is a great risk management strategy.

**Be careful not to cut your N rate too much.** The obvious temptation is to cut back on your N rate when N prices increase. This is not done without significant tradeoffs and risk, as yields and crude protein content are very closely related to the N rate (see last month's article). I have taken a very close look at our (UGA) recommendations for N fertilization rates for our hay crops and remain very confident that they still hold true for 2008. For example, our N recommendations for hybrid bermudagrass hay for the entire season is 200-400 lbs N/acre (rates above 300 lbs N/acre are only recommended when there is a high yield potential or irrigation). Within this range, every lb of N will

normally produce 30-40 dry lbs of forage (depending on growing conditions and yield potential). If the hay is worth \$100/dry ton (\$0.05/dry lb), each lb of N will provide \$1.50-2.00 worth of bermudagrass hay. So far, the price of 1 lb of N (\$0.65-\$0.80, depending on the source) is well below the value of the hay that it will produce.

**Account for differences in N sources.** It is also important to consider that not all N is created equal. This is particularly important if you have to switch from ammonium nitrate to some other N source. This is because ammonium nitrate is relatively more effective and reliable than other N sources, especially at low N rates. Poultry litter, ammonium sulfate, and urea-containing N fertilizers are relatively less effective (Table 1). Thus, switching to a different N source may not be as simple as just accounting for differences in N content. Differences in the relative effectiveness of the new N source must also be considered.

**Table 1.** The effectiveness of some alternative nitrogen (N) sources at low, medium, and high fertilization rates on hybrid bermudagrasses (relative to ammonium nitrate). Adapted from Burton and Jackson, 1962; Wilkinson, 1979; Silveria et al., 2007.

Nitrogen Source	Nitrogen Content % N	Fertilization Rates		
		< 200 lbs*	250-350 lbs	> 400 lbs
Ammonium Nitrate	34	100%	100%	100%
Amm. Sulfate**	21	95-97%	95-100%	60-70%
Poultry Litter	3	85-92%	90-100%	80-95%
UAN Solution (32%)	32	70-75%	85-92%	92-95%
Urea	46	79-82%	82-92%	88-93%

\* Actual lbs of N applied per acre per year.

\*\* Ammonium sulfate has more of an acidifying effect on the soil than the other sources listed here. Long-term use or high-fertilization rates of ammonium sulfate can negatively impact its relative effectiveness as an N source.

**Focus your fertilizer.** I probably haven't talked you out of cutting your N rate, have I? Well, at least consider focusing your fertilizer dollars on specific fields or areas within a field. It is obvious that not all hayfields (or even areas within a field) are equal. You know what fields and what areas within your fields tend to do best. It is important to remember that you need not put the same rate on every area. In fact, fertilizer dollars are better spent when the rate is at least maintained or even increased on the better areas or fields. Experience in "precision ag" has shown that the more productive fields or areas within fields will typically have more organic matter, water-holding capacity, drainage, etc., and actually are much more responsive to fertilizer. In other words, you get more hay per lb of fertilizer added. In the row crop field, that is called site-specific management. In a hay field, I call it common sense.

By heeding these recommendations, yield losses and production risks can be minimized. The cost of fertilization has many folks spooked. But these "N-Times" are manageable, if attention is given to the details. To learn more about N fertilization and the implications of soil fertility on hay and pasture productivity, check out our website at [www.georgiaforages.com](http://www.georgiaforages.com) or contact your local University of Georgia Cooperative Extension office.