



PRINT VERSION

Fertilizer Economics 101: Can You Afford to Fertilize?

by [Dan Childs](#)

All agricultural activities use just more than 5 percent of the total amount of petroleum and petroleum products consumed annually in the United States. Many of the products are consumed as diesel, gasoline and nitrogen fertilizer, which is made from natural gas. Cattle ranching and dairy farming account for roughly 40 percent of the amount used by all agricultural activities, the largest of any agricultural sector. As prices for petroleum products have escalated in the last few years, so have cattle prices. Therefore, even though input costs have risen – driven mostly by fuel and fertilizer costs – income from cattle sales have kept pace. This balance has allowed beef producers to pay for increased costs while still enjoying a rising net income. However, as the current cattle cycle enters its second year, the outlook for cattle prices is in direct contrast to the outlook for energy costs. The higher costs/lower revenue squeeze will emphasize the need for efficient use of all inputs – especially fuel and fertilizer.

For many forage-based beef operations in the southern Great Plains, the primary forage is bermudagrass. The reason for its popularity can be attributed to several factors, one of which is its ability to respond to fertilizer. Bermudagrass will produce a certain amount of grass without fertilizer for a period of time. However, Noble Foundation soil and crops specialists have observed stand declines when no fertilizer is applied for several years. As fertilizer costs increase, producers must ask the question, "Can I afford to fertilize?"

To answer this question, some assumptions must be made. The assumptions are as follows:

1. One acre of bermudagrass will produce 2,000 pounds of forage without any fertilizer.
2. Soil pH, phosphorus and potash are adequate. (This information is very important and is determined by properly taking a soil sample and having it analyzed.)
3. Bermudagrass, on average, will produce 40 pounds of forage for each pound of nitrogen applied.
4. Nitrogen costs 48 cents per unit of N applied. (\$306/ton for 34-0-0, which has 680 units of N per ton – $306 \div 680 = \$.45 + \$.03$ for application = \$.48)

Based on these assumptions, a determination can be made for what a pound of additional forage will cost using fertilizer. Once this cost is known, a comparison with other sources of forage can be made to determine if you can "afford" to fertilize.

With one pound of nitrogen costing 48 cents and it producing 40 pounds of grass, the cost of fertilizer in a pound of additional forage is \$.012 ($\$.48 \div 40$ lbs.) or \$24 per ton.

What are the alternatives to obtain forage if the decision is made not to fertilize? Maybe additional pasture can be rented, hay purchased or a summer annual planted for grazing and/or hay. If an acre of grass that will produce the base assumption of 1 ton can be leased for less than \$24 per acre, then that is a better deal than fertilizing your own grass. If no land is available for lease, then what about purchasing hay? There have been years in the past when spring rolls around and everyone has hay left over; hay buyers can negotiate some pretty good deals during those times. It is safe to say that this spring, all local hay inventories have been exhausted, plus everyone else's within 500 miles. There are no bargains to be had. Therefore, it is unlikely that forage can be purchased as hay for \$24 per ton. Keep in mind, however, that purchased hay has more value than just what nitrogen fertilizer costs. Calculations using current nutrient prices for N, P and K plus custom baling rates reveal that round bales of bermudagrass would be worth near \$53 per ton. Be careful when comparing mechanically harvested forage that is packaged appropriately for transportation and storage versus a ton of standing forage. There is a difference. It would appear, however, that fertilizing your grass for grazing would be less than half the cost of purchasing hay.

A budget for planting a summer annual grass for grazing and/or hay such as pearl millet, fox tail millet or a sorghum-sudan cross indicates that cost per ton of forage produced could easily approach \$50 per ton. Fertilizing an existing stand of bermudagrass would be more economical and less risky.

The best answer to the question of "Can I afford to fertilize?" for many beef producers is "Yes." Even though nitrogen prices are high and appear to be going higher, it still is a good, sound economic decision to apply fertilizer.

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