

How Much Fertilizer Can I Afford?

AGRI-VIEWS

by Chuck Otte, Geary County Extension Agent

In crop production we know that fertilizer is an important part of producing a good crop. We also know that it can be an expensive part of that crop production bill. Depending on the crop it can be 20 to nearly 50% of direct costs and 15 to 30% of total costs. This year it may be even higher. Compared to late last summer, fertilizer prices have risen steeply. Increases have ranged from 100% to over 200% depending on the type of fertilizer. (Homeowners and gardeners need to be prepared to see higher prices for their fertilizers also!) While prices have moderated slightly in recent weeks, we are still looking at fertilizer costs that may be nearly double what they were last year.

The first instinct for many is to blindly cut fertilizer application rates. While reducing application rates will definitely reduce how much you spend, it can also increase the cost per bushel as yields may very well drop. We are dealing with an economics principle known as the law of diminishing returns. The biggest response comes from the first pound of fertilizer applied. As you add more fertilizer the yield increases and the cost of production, per bushel, goes down, up to a point. You then get to the point where additional fertilizer doesn't increase gain enough to justify the expense and cost per bushel starts to go back up. All of these factors depend on price of the fertilizer applied and value of the product produced.

A co-worker in another county had done some work on nitrogen fertilizing of bromegrass several years ago and updated her charts recently to reflect the new realities. For the record the following example was one with \$1.10 per pound of nitrogen and \$90 per ton bromegrass hay price. Based on nearly 30 years of fertilizer studies they knew that the first 10 pounds of fertilizer would increase bromegrass production a quarter of a ton. That 10 pounds of fertilizer returned \$10.46 worth of increased production per acre. The second 10 pounds increased production an additional 0.22 tons per acre and returned \$8.94 worth of production per acre.

As nitrogen fertilizer application was increased, at 10 pound increments, yield continued to increase up to 130 pounds per acre. So the peak agronomic performance came with 130 pounds per acre of nitrogen. However, when you started calculating the cost of that increased production and the value of that increased production, the law of diminishing returns kicked in if you went beyond 70 pounds of nitrogen per acre. After that, it was costing you more for the fertilizer than you were getting back in hay production. As hay value increases or fertilizer price decreases, you can justify applying more fertilizer. But with the prices currently at play, 60 to 70 pounds of nitrogen is all you can justify for bromegrass. Every time I see about someone growing super high yields in yield contests I keep thinking, what did that extra yield cost?

As you make your fertility plans for any crop production this year, it is important NOT to make a knee jerk reaction on cutting fertilizer rates. Start with a good soil test so we can properly account for the nutrients that you already have in your fields. Some years I might encourage you to build soil nutrient levels for nutrients like phosphorus. This is not one of those years. Once we know what's in the soil, we can determine a cost appropriate fertilizer application rate that won't break the bank, hopefully. High prices do not negate the plant's biological need for proper nutrient levels for good growth and decent yields. Now is not the time of making irrational decisions. Now is the time to approach crop production with a keen management mind to get the best return on your dollar!