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For more information,
contact: James Coover
Crop Production Agent, Wildcat Extension District
jcoover@ksu.edu, (620) 724-8233

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Tips to Reduce the Fertilizer Bill

Natural gas prices, trade tariffs, supply and production issues - there are a lot of reasons we've been told for the current fertilizer prices. Either way, the fertilizer bill is going to be rough this year. Dr. Bruno Pedreira, agronomy specialist with K-State Extension says, "The golden rule for 2022 will follow the four rights; right fertilizer, right time, right location, and right placement." There are a number of things that farmers can do to help reduce the fertilizer bill, at least in the short term.

Increasing nitrogen use efficiency

While nitrogen use efficiency is a calculation, effectively it means getting the most out of a nitrogen application and reducing losses to the environment. First and foremost, this means reducing over application and making sure unit of additional N is getting a cost effective yield response. In the long term nitrogen and other fertilizers can be reduced using management zones, variable rate applications, grid sampling, and yield data.

In the short term, being realistic about yield goals could mean applying less N in some fields. Pedreira says that "This is the kind of year to go field by field." Even in normal years we apply fertilizer not based on maximum yield but maximum profit. In years of extreme fertilizer prices, the breakeven point of cost per unit of fertilizer to profit from the additional yield for that unit, is going to be reduced.

Nitrogen losses from denitrification can be as high as 40% in some years. Denitrification losses can be limited by applying smaller amounts pre-plant and top dressing the rest when the corn or wheat needs it. Using nitrification inhibitors can also be valuable in decreasing denitrification losses. Nitrogen losses from volatilization of urea can be reduced with timing of application. Volatilization is greater in warmer weather with dewy mornings (as the urea slightly dissolves first before volatilization) with losses as high as 20%. Ideally, any method of incorporation or application shortly before rain over a quarter of an inch, will move the urea into the soil where it will be protected from volatilization.

Nitrogen via a cover crop can add substantial nitrogen credits. Full stands of legume cover crops like clovers and vetch can provide 75 to 150 lbs of N per acre. Even mixed stands of grasses and legumes have N credits of 50 to 100 lbs per acre.

For soybeans, Pedreira states that “Inoculation of soybeans is a cheap way to insure nodulation and to increase root reach for soil nutrients.” Of course, soybeans also give a 20 to 40 lb N credit to next year’s corn crop.

Banding/In-furrow fertilizer

Fertilizer efficiency is more than just rate, placement is a major consideration. Immobile nutrients like phosphorus, potassium, and zinc will become fixed within the soil and banding can create a zone of plant available nutrients. This can be especially important in acidic or low fertility soils. Nutrient fixation can be higher in our heavy clay soils as well.

There are a few different options and terms when it comes to banding fertilizer. Starter fertilizer is placed near the seed but not directly against it. This is common in early corn or late planted wheat to provide an early nitrogen and phosphorus boost in cold soils. While corn has a greater response to starter fertilizer, the method of banding P and K can have a response in soybeans too. In-furrow fertilizer is placed directly with the seed but has a limit of 8 lbs. of N and K combined in 30-inch corn rows due to salting effects. Some research has shown that even a small amount of urea in-furrow can reduce germination. In-furrow is not recommended for soybeans because of sensitivity to salt. Research has shown that smaller banded fertilizer applications can have similar yields as larger broadcasted applications. There are some limits and it requires equipment with those capabilities, but banding can be a good way to get through a high fertilizer cost year in nutrient deficient soils.

Using the “bank”

Immobile nutrients like phosphorus, potassium and zinc are stored within the soil complex from year to year. “Next year it will be even more important to pull soil samples. The cost of the soil test is the same. The cost of fertilizer is two to three times more expensive” states Pedreira. “This won’t be a year to blindly apply a set rate.” Many fields in southeast Kansas have a background of high P and K because of past fertilizer applications. Grid-sampling or management zone sampling become much more cost effective. With high fertilizer prices eating into profit margins, this will not be a year to ‘build’ P and K levels, but apply cost effective and often minimal amounts.

If you have any questions about fertilizer rates, soil fertility, or analyzing soil reports, please give your local county extension office a call. We also have soil probes available (which is the only accurate way to take a soil test). You can reach me in the Girard office of the Wildcat Extension District at 620-724-8233.

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