

# NEWS & VIEWS

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## High Fertilizer Prices: What Can I Do?

RECENTLY, fertilizer prices have been climbing higher and supplies of some nutrients have been tight. Yet most of us realize, and research continues to confirm, the critical role of fertilizer use in profitable crop production. The result is more emphasis on increasing the efficient use of nutrients to help accomplish grower production goals. Here are some suggestions for keeping fertilizer bills as low as possible without compromising high yield levels that bring much needed profit.

### Accounting for Nutrient Supplies Already in the Soil

How much of each nutrient do you currently have in your soil? Take advantage of what is already there. When fertilizer costs increase and supplies tighten, soil test results provide the best guidance for deciding which nutrients should be applied and how much of each one to use. If soil test levels of phosphorus (P) and potassium (K) are high, there is little chance that an economic response to these nutrients (beyond a starter band) will occur in the year of application. In such cases, producers can take advantage of existing soil nutrient supplies. However, this approach must be done with the understanding that supplies will need to be replenished later to avoid future nutrient deficiencies and associated revenue losses.

Taking nitrogen (N) credits for previous crops is an important part of adding only what is needed. Many people also forget that with some crops, like alfalfa, lower N application rates may be justified for crops planted up to 2 years after plow-down.

An effective, but often overlooked tool is the soil nitrate test. This test helps producers account for nitrate already present in their soils. If levels are high enough, freshly applied N rates can be reduced...in some cases substantially. This test is particularly useful where manure

applications have been made, yields were poor, or growing conditions were dry.



### Accounting for Nutrient Supplies on the Farm or Nearby

If you have access to manure, whether it is from a feedlot, dairy, or your own operation, use it as effectively as possible. The current economic and supply conditions may increase the justifiable distance that manure can be hauled. Also be sure to check the nutrient content of the manure and the rate at which it is applied, so you can calculate how much of each nutrient is being put on. If spreader calibration and manure testing have seemed too time consuming or too expensive to deal with in the past, there is no better time than now to reconsider using this resource more carefully.

If your manure application equipment is dated, it may be time to run the numbers and see if improved equipment can be justified. In some cases, manure application rates might be reduced and still meet crop needs, allowing manure to serve as a nutrient source on more farm acres. It's also a good idea to record the places within a field where manure is applied. This can be accomplished with flags or global positioning system (GPS) receivers and software.

### Timing Nutrient Applications for Highest Efficiency

Each field and specific crop will require different management plans, but in general, the following practices will apply. Applications of N fertilizer should be timed to coincide with the periods of maximum crop uptake. Splitting the total N application across various times in the growing season can increase N recovery by the crop. Several options exist to accomplish this goal. A pre-plant N application combined with an in-season sidedress application is common for crops throughout the region. Making multiple applications of N through center pivot or drip irrigation is an excellent option where available. Including a source of slow-release N fertilizer may also be appropriate in some circumstances. In some areas, fall N applications can be effective if they are made when soil temperatures drop below 50 degrees F and remain there. Nitrification inhibitors can also help reduce or eliminate N losses occurring between fall and spring.



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Whenever possible, manure applications should be made close to the time of crop need...usually in the spring or summer. Estimating the rate of nutrient release and plant availability of organic materials is not always easy. Whatever the source, it is always a challenge to consistently provide adequate, but not excessive, levels of N to the crop.

Timing the application of K and P is perhaps not as difficult as with N, since they are not so prone to loss. However, it is important to provide the roots with an adequate supply of all the essential nutrients all the time to avoid losing growth and yield. For annual crops, K and P are usually best applied anytime before planting.

### **Placing Nutrients for Greatest Efficiency**

Generally, banded nutrient applications provide higher first-year recovery of applied P and K than do broadcast applications. Consequently, some universities suggest rate reductions when nutrients are applied in this manner. If short-term economic decisions dictate banding P and K at rates less than those removed in the harvested crop, producers and advisers may want to build in a plan for replenishing soil nutrient supplies in the future when economic conditions improve. In fields with longer-term management strategies, a combination of a banded application with a broadcast application has the best chance for maximizing yields. Bands placed near the seed provide early season access to nutrients, while overall higher fertility levels in the bulk soil provide access to nutrients by the whole root system later in the season. This approach has worked well for efficiently meeting the nutrient needs of a variety of annual crops. For perennial crops, it is generally best to correct any nutritional limitations before planting, and then monitor subsequent nutrient requirements through foliar analysis or based on nutrient removal through the harvested products.

### **Allocating Money to the Right Nutrients**

In times like these, many emphasize that N needs must be the top priority. Before jumping to this conclusion, soil test levels of a field must first be examined. In the worst case, it may be found that N, P, and K are all in short supply. When this happens, crop response to any single nutrient will be disappointing if only that one nutrient is applied. For instance, when P levels are low, the plant has a reduced supply of stored energy. Without enough energy, the plant is not effective in absorbing limited soil N, P, or K supplies. In such cases, if recommended rates of each nutrient cannot be afforded, it is best to apply at least some of each nutrient, rather than focus on one nutrient alone. As an example, banding low rates of P near the seed can provide additional energy needed by the plant to help it take advantage of applied K and N. This balanced approach will maximize the effectiveness of all applied nutrients.

### **Prioritizing Fields and Areas Within Fields**

Decisions to apply fertilizer across the farm should not only be based on soil tests, but also on economic evaluations of each field or field area. What is the break-even cost of production for each field in a farming operation? Which fields consistently make money, which ones are hit or miss, and are there some fields that are just a drag on the business? Spending time looking at how fields have performed over the years may help farmers and advisers focus resources on the real money makers. The goal of such an analysis is to ensure that consistently profitable fields have the nutrients they need to maintain production and revenue levels. With the advent of precision agriculture, this evaluation can be brought to a higher level of resolution, extending the concepts to areas within a field, rather than the entire field.

### **Reexamining Yield Goals**

Since many nutrient recommendations are based on yield expectations, setting realistic yield goals is important. One way to set realistic expectations is to look back at several years of performance to get an idea of what typically happens during various growing seasons. Yield averages from several years are often useful guideposts in establishing appropriate goals for future fertilization.

### **Re-examining the Basis for Nutrient Recommendations**

Are your nutrient recommendations based on the best science available? University research and publications generally provide the basis for science-based nutrient management decisions... and then they are adjusted to meet local conditions. How do your currently used recommendations compare to these? If modifications or different approaches are being used, is there good information behind them? It may be time to look at the most recent scientific information, like university guidelines, to see how your current management practices compare.

### **Summary**

When operating funds are limited and supplies of fertilizer are tight, it becomes even more important that nutrients be used as efficiently as possible in accomplishing grower goals. Efficient nutrient use is possible only when informed decisions are made. There are no magical shortcuts or products that will eliminate the need for crop nutrients—just smart management decisions that can have a large impact on the bottom line. Be skeptical of anyone promising to radically change your crop nutrition program with unproven concepts. **Keeping soil test information up-to-date, identifying profitable fields or field areas, using all nutrient sources available, fertilizing for appropriate yield levels, and adopting nutrient management practices grounded in proven scientific principles assure the greatest chances for success. ■**