



ADVANCED AG SYSTEMS'

Crop Soil News

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"It is the crops
that feed the
cows that make
the milk
which creates
the money."

Dealing with High Fertilizer Cost

The high cost of fertilizer has farms in sticker shock and wondering how they were going to get crops fertilized for yield next spring. There are several steps that you can take to help this situation tremendously. We will discuss the first two in this letter, more next time.

The first and most critical, as with any investment, is to **put your money where it will give a return**. The same is with fertilizer. As we clearly laid out in [October 2017](#) (click to open), what is needed in the field will vary tremendously from field to field and farm to farm. When a nutrient gets to a high or a very high level, the chance of getting a return on adding more fertilizer of that nutrient goes to nearly zero. It becomes a cost without a return. **BUT I NEED FERTILIZER IF I WANT TOP YIELD.** Yes, but if it is there already, adding more does nothing. The yield then is dependent on other nutrients, lime for pH (remember that stuff we used to put on but skipped to save money? – see paragraph below), soil health and structure, and other management issues.



Many fields, especially those frequently manured, have more than enough Phosphorous and Potassium to grow high yielding crops without additional fertilizer. An unbiased soil test can tell you when you can or can't.

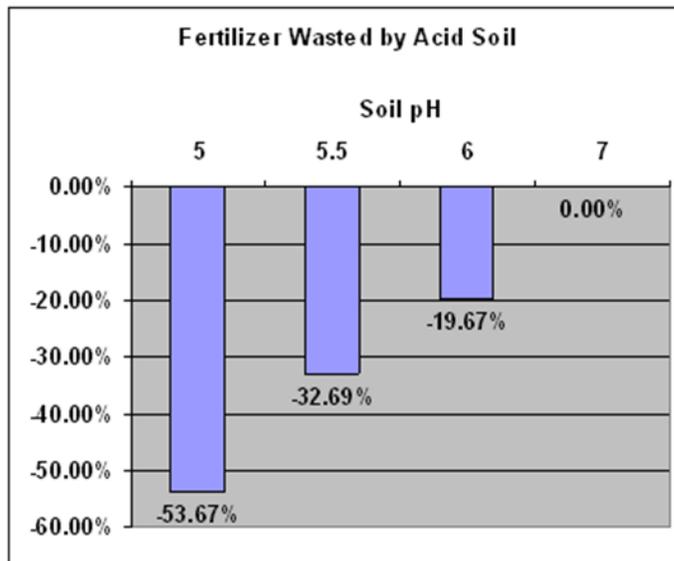
Thus, the first step is that if you do not have a **soil test on EVERY FIELD YOU BUY FERTILIZER FOR**, in the past two years you are guessing the nutrients needed in the field. It is like driving through the field in a pickup truck, throwing money out the window. We sample forage for the cows frequently to optimize economic return. Why is it so difficult to do that for your fields? October through freeze-up (we were able to sample into January last year in much of NY) is usually a slow time for fieldwork and so you can get it done in time for winter fertilizer orders. Once you get the results you can **prioritize fields by nutrient content**. Those with high fertilizer nutrient levels (most likely manured fields) can get by with a minimum starter. If phosphorous and potassium are high (frequently occurs on daily spread fields) we have had farms very successfully adding 30 lbs. of nitrogen as their corn starter and not applying any phosphorous or potassium as those levels tested high so there is no return to adding more. They had excellent yields. We can't afford anymore to simply apply one starter over everything.

As you add more nutrients than removed by the crops (eg manure), the soil levels increase, and the chance of response decreases. A medium test field will give optimum yield with much less fertilizer than a low testing field—pouring it on just wastes money. The su-

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preme irony is that the amount of fertilizer available to the plants is optimized by having the pH correct for the crop – yet liming has been forgotten by many farms.

This is the second step that you can take to relieve some of the fertilizer price hike. Fertilizer prices are going up - are you getting all the use of nutrients that you paid for? No, we are not talking about fertilizer suppliers short changing you. We are talking about you short changing your crops. The biggest regulator of the return on your fertilizer investment is raising the pH to above 6.2 for corn or 7.0 for legumes. This is where **fertilizer is most available** and the plant growth can make the most use of it. As the pH drops, fertilizer efficiency drops 30 – 50% in producing crop yield (spending more, getting less). Correct pH soil is a **BASIC MANAGEMENT PRINCIPLE** for any manager who has any desire to run a profitable farm. A few years back I had completely soil sampled one of the top managed farms. We discovered alfalfa fields that were at a pH too low to ever grow corn well! Ironically, he was putting too much fertilizer on high testing fields, to the point of hurting plant growth and tying up critical minor elements like zinc. What he saved on fertilizer more than paid for the needed lime IN ONE YEAR!



Soil pH	Nitrogen efficiency	Phosphorous efficiency	Potassium efficiency
7.0	100%	100%	100%
6.0	89%	52%	100%
5.5	77%	48%	77%

Fields of 5.4 – 5.8 are common, especially on rented ground. At these pH levels, as the chart above shows, **you are throwing away a third of your fertilizer** impact. Even at 6.0, nearly 20% is lost due to the acid soil’s effect on availability. In this era of high prices, **correcting the pH FIRST** and then adding what fertilizer the checkbook will allow you, is the way to maximize the return in your crop.

If reducing fertilizer makes you nervous, the Cornell fact sheet [Starter Phosphorous for Corn](#) (click to open) gives some very conservative guidelines. Unless there is excessive P in the field they usually recommend sufficient starter to meet crop removal. With the very high prices and potential supply issues, the suggestion is to just use starter N on high fields and mine some of the excess P to get you through this next cropping season.

I haven’t talked about potassium but it is important also. Manure frequently contains as much potassium as nitrogen and it doesn’t volatilize so it all available for the crop. 8,000 gallons manure/A will often have enough potassium to equal 300-400 lbs./A of potash fertilizer. The added factor is that there are a number of factor is that there are a number of silty clay and clay soils (or with proper rooting, sub soils) that have a tremendous amount of potassium that can supply the crop. Again, tapping this supply can help you get both high yields and through the cropping season without breaking the bank. As you reduce added nutrients, watch the amount of sulfur you have for protein formation. The other factor is that fields with very high phosphorous often have zinc deficiencies caused by too much P. An unbiased soil test can determine this for you.

Sincerely,

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Hand
to Better
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