



Crop Soil News

<http://www.advancedagsys.com/>

October 2017

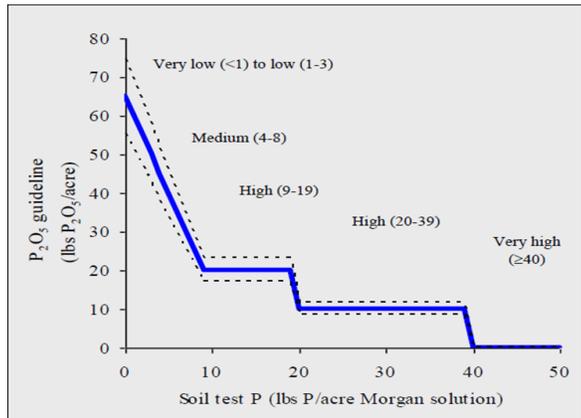
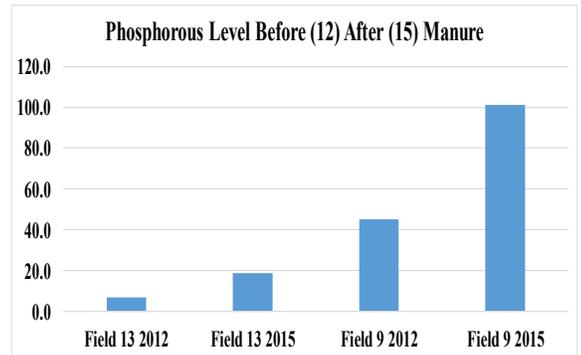
"It is the crops that feed the cows that make the milk which creates the money."

Optimize Forage Production System on Your Farm.

At this time of year there is a step you can take to optimize the forage production system for your farm. It is a step livestock farmers, especially dairy, can really benefit. We are talking of analysis of what you have to work with. Dairy farmers wouldn't think of feeding a forage without knowing the nutrients it contains. Yet many forget; don't have time; don't get around; to test their soil to see what it contains. An ancient example is that of a wooden rain barrel. You can only fill it as full as the shortest stave. In spite of computer analysis, drone scouting, instant communication, the rain barrel example still holds true – and is ignored. We will pay over \$200 for a bag of seed that barely covers 2 acres, but not take a \$15 soil test that optimizes the growth of that \$200/bag of seed. Traditional or organic, there are basic physical and chemical limitations to yield from your fields. Suboptimal protein or energy will limit milk production. Suboptimal fertilizer nutrients will limit yield. Conversely, one at a high or excess level will limit profitability if you put on more than is needed. It can even create shortages of other nutrients.

Fertilizer nutrients applied after manure applications without a soil sample will be far off from the response you expected. The charts at the right show two fields that I managed that had manure application between the sampling in 2012 and the sampling in 2015 (we now yearly sample). In field 13 – a previously neglected field, the phosphorous level went from medium low (will be a significant response to fertilizer P applied) to a high level (little or no economic response to purchase/applied P). Field 9 which had a relatively high phosphorous level from previous managers, went to a very high level (potential soluble phosphorous loss) where there is no response to P. Even worse, the high phosphorous ties up zinc which was marginal to start with and so zinc deficiency started showing up – because of too much fertilizer P. The research backed chart from Cornell at right <http://nmsp.cals.cornell.edu/publications/factsheets/factsheet8.pdf> shows there will be no payback response from phosphorous fertilizer for optimum yield at those phosphorous levels. Conversely, fields such as hay fields can rapidly move to deficiency level when crops are removed without manure or fertilizer returned. You can't balance the soil

Advanced Ag Systems
Research, Education, Consulting



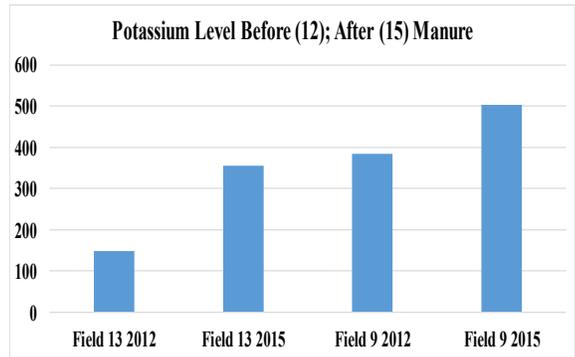
<http://nmsp.cals.cornell.edu/guidelines/factsheets.html>

without knowing what is available. You need to look at all field factors to increase your yield.

The same field's potassium levels (graph at right) show similar jumps in nutrient level. Response to purchased/applied fertilizer at these levels will be slim to none. We are not against fertilizer purchases, they are critical to high yields. Buy what will give you an economic response in YOUR fields.

Yet all of this could be for naught – you still might not get the yield potential of your soil – because you didn't make decisions from knowledge, but rather from guesses. Research that I worked on with Dr. Ketterings of Cornell University looked at alfalfa response to sulfur (sulfur is short on many non-manured fields today). On the research farm we found sulfur was limiting on alfalfa based on forage tests. In the research experiment we added sulfur – with **no resulting increase in yield** or quality. 10 sites in the state with similar conditions found a significant response to sulfur. That is because our **soil pH was 5.8**. Looking at a nice alfalfa field (upper photo at right) does not tell you what is limiting or how to reach its maximum potential. Our nice alfalfa was a thin weedy stand (lower picture at right) by the third year (due to low pH.) This was in spite of topdressing with potassium and minor elements. **Only a soil test will tell you.** It is similar to you trying to feed a high forage diet and not having enough water for the cows – you need to meet the basic needs of the animal and of the crops – a soil test will tell you if you are.

Ok, we soil tested, nutrients and minor nutrients are all at medium to high levels; pH is where it is supposed to be – now what can we do to boost yields. This is a point many dairy farms are at. They have to get manure out and crops in within tight windows. With bigger tractors they muscle through – at a cost to soil structure, health, drainage, physical properties and soil health. For many it would be a real eye opener to take a shovel and dig to see what the roots are doing. You can still do that in October when you go around collecting soil samples. Often the soil probe itself will point out the potential limits to your yield.



2009 full alfalfa stand pH 6.2 (should have been limed)



2012 now runout alfalfa stand pH 5.8 (should have been limed - even for corn!)

Sincerely,

Thomas Kilcer,
Certified Crop Advisor

172 Sunnyside Rd
Kinderhook, NY
12106

Tel: 518-421-2132

tfk1@cornell.edu

**The Helping
Hand
to Better
Agriculture**

