Know Your Soil’s Needs

Spring…..I like just hearing that word. After a long cold season, spring is a welcome time to most of us. Spring brings warmer weather and longer days but spring also brings increased activity and work. One only has to pass by the agribusinesses serving our farming community to notice the change of pace. The lots are buzzing with semis and fertilizer buggies preparing to add needed nutrients to our awakening crops and pastures.

While adding fertilizer is usually a good thing, it is important to know what you need and how much you need before buying the first ounce of soil amendments. Fertilizer ingredients are expensive and care needs to be taken to make sure you apply the correct amendments at the correct time.

Let’s assume you have taken a soil sample and have a print out of what your soils are lacking. If you have results from the Virginia Tech Soils Laboratory, you will receive a printout similar to the illustration that accompanies this article. The crop in this case was a commercial vegetable, so even though the analysis shows “VH” or very high levels of phosphorus (P) and potassium (K), the crop still needs additional nutrients to thrive.

Looking at the “Fertilizer and Limestone Recommendations,” we note that the results show that we need 2.75 tons of ag lime per acre. This recommendation comes from the soil test results showing that the cropland is acidic as evidenced by the pH reading of 5.8. Ideally, the pH of your soils should be 6.8 to 7. Soils that are acidic (a pH below 6.5) or caustic (a pH above 7.5) will not be able to utilize fertilizer to its fullest potential. So let’s stop here and discuss liming soils.

If needed, a lime recommendation is given to neutralize soil acidity and should last two to three years. After that time, you should have the soil retested. The measured soil test levels of calcium and magnesium are used to determine the appropriate type of limestone to apply. If neither dolomitic nor calcific lime is mentioned, or “Ag” type or “agricultural” limestone is stated on the report, then it does not matter which type is used. When no information on the Soil Sample Information Sheet was provided regarding the last lime application, the lab assumed you have not applied lime in the past 18 months.

Attention lawn and garden owners…..Do not over lime! Many times homeowners apply lime just because they have in years past and lime is relatively cheap and easy. Too much lime can be as harmful as too little. For best results, apply lime, when possible, several months ahead of the crop/plant to be planted to allow time for more complete soil reaction.

Once we have the pH going our way, our applied fertilizer can be used to full affect. Our sample calls for 90 pounds of nitrogen (N), 25 pounds of phosphorus (P2O5), and 50 pounds of potassium (K2O). The trouble is we buy fertilizer by percentages, not pounds. A 50-pound bag of 10:10:10 fertilizer contains 5 pounds of nitrogen, phosphorus and potassium (N, P, and K).

Readymade blends may be fine for fields, lawns or gardens but it also can lead to gross over-fertilization issues as well. In our example, our soil needs more N more than P or K, so in order to meet that need, we would have to apply 900 pounds of 10:10:10 per acre in order to have 90 pounds of N available (90 pounds needed divided by 10% or 0.10). The problem is that 900 pounds of 10:10:10 oversupplies phosphorus by almost twice too much and potassium by a factor of nearly 4! Over feeding soils phosphorus is a major contributor to issues such as algae blooms in bodies of water.

A generally cheaper and safer path to fertilization (especially on large boundaries) is to create a custom blend. Custom blends use ingredients to meet the nutrient needs of the soils in a more precise manner. Commonly used ingredients in our area include urea (for nitrogen), Diammonium Phosphate or DAP (for phosphorus) and Potash (for Potassium).

To use these, we need to know the chemical make up or percentages of N, P and K in each. While they may differ slightly, I use the following to calculate custom blends. Urea is 34:0:0 (34% N); DAP is 18:46:0 (18% N and 46% P) and Potash is 0:0:60 (60% K).

I begin with DAP simply because it contains both N and P properties. Referencing our soil sample, we need 25 pounds of P, therefore we will need 54 pounds of DAP (25 divided by 0.46). DAP also supplies almost 10 pounds of N (54 pounds of DAP multiplied by 18% or 0.18); therefore, we only need a little over 80 pounds of nitrogen from urea, which works out to between 235 and 240 pounds of urea needed per acre.

Notice the 5-pound range of the Urea as compared to 54 pounds of DAP. It is important to know the accuracy of the scales used to create custom blends. Most scales at large fertilizer suppliers will measure in 5 or 10-pound increments. That may seem too much to the average person, but when you are applying fertilizer by the ton, 5 to 10 pounds is precise.

Finishing up our custom blend, we need 50 pounds of K. To supply this, we need 85 pounds of Potash (50/0.60 = 83.33 rounded up).

Now we are ready to apply a custom blend that contains (on a “per acre” basis) 240 pounds of urea, 55 pounds of DAP and 85 pounds of potash for a total of 380 pounds of blend per acre. Compare this to the 900 pounds of 10:10:10 or even 475 pounds of triple 19, and we see that we are handling less material, in a more precise and fuel efficient manner.

Considerations also need to be taken regarding the ability of your spreader to accurately apply smaller amounts over an acre and the overall cost of the ingredients of a custom blend versus a readymade product.

In closing, think of lime and fertilizer as an investment rather than a straight cost. Regardless of your situation, properly adding amendments to your soil promotes healthy plants, healthy soils and a happier landowner.

Upcoming Events

Feb 14-17 National Farm Machinery Show, Louisville KY

Feb 15- Mar 28 Master Cattleman Zoom Meetings, Every Thursday evening from 6:30 to 8:30

Feb 16 Deadline to consign calves to March VQA Sale

Feb 27 Smyth Washington Cattleman Association Meeting, Washington Co Fairgrounds 6:30

Mar 19 VQA Sale

Mar 25 VQA Steer Take Up

Mar 26 Smyth Washington Cattleman Association Meeting, Washington Co Fairgrounds 6:30

Mar 27 VQA Heifer Take Up

Jun 13-15 OGATA Summer Tractor Show, Fairview Homestead, 908 Hillman Hwy, Abingdon

July 1-5 Smyth County 4-H Camp, sign-ups and deposits being taken now!

If you are a person with a disability and desire any assistive devices, services or other accommodations to participate in this activity, please contact Andy Overbay or Pam Testerman at (276) 783-5175/TDD (800) 828-1120) during business hours of 8:00 a.m. and 5:00 p.m. to discuss accommodations 5 days prior to the event.

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