GUEST COLUMN

Forage Fertility Management: Second Half

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Forage producing areas of the upper Midwest were blessed with plenty of rainfall during the first half of 2014. There's a good chance you've experienced better than average forage yields so far in 2014, given above average soil water availability. But some areas received rains that went beyond blessings, creating challenges in soils that are not well-drained. This article will address a few fertilization management factors impacted by our 2014 growing season rainfall so far, with some tips to realize potential production during the second half of the growing season.

Let's start with the upside in mind. Sustained soil moisture availability into the summer of 2014 provides good potential for continuing robust plant growth and yield. This is especially the case with grass species. Grass roots don't reach as deep in the soil profile versus alfalfa, so good topsoil moisture status can help reduce the degree of 'summer slump' in cool-season grasses.

With robust yield comes increased nutrient uptake from soil. You can account for added phosphorus (P) and potassium (K) removal in your maintenance fertilization rates over time. Of more immediate concern are leachable anions: nitrate, sulfate, and borate. Just as good soil moisture status makes robust crop growth possible, excess rain can leach these anions below the root zone even in productive, well-drained fields. When leaching occurs, it can leave a crop lagging behind its potential unless topdressing with additional fertilizer to replace leached nutrients. In addition to leaching, nitrate and sulfate losses can occur through denitrification and desulfofication in waterlogged areas of fields. Surviving crops in these areas can also be responsive to topdress fertilizer but may recover less of their potential yield.

Consider topdressing nitrogen (N) and sulfur (S) to maintain high yield potential in grass forages. Nitrogen recommendations can vary by state, but generally range from 50-60 lbs topdress N/ac. As for S, the most rapid availability will be from a sulfate-containing fertilizer such as ammonium sulfate, which also provides N for grass. When topdressing N, consider using the trip across the field as a good opportunity to apply P and K as needed according to soil test, or annual maintenance requirements based on crop removal.

High yield alfalfa production requires a sound fertility maintenance program for P and K. Timing can be once per year, preferably immediately following a harvest to avoid excess damage to emerging crown buds. Consider adding S and boron (B) to your normal P and K maintenance fertilization, based on plant tissue analysis.

Let's address S in more detail since it's often less understood. Sulfur deficiency has become more common since coal-fired industries have nearly eliminated S release into the air. Concentrated modern fertilizers tend to include less S, and increased yields remove more from the soil. Thus, chronic S deficit has become more common during the past two decades. You run the risk of letting S deficiency hold back your yields if you don't take measures to understand and manage the S status of your crops.

Organic matter turnover in the soil, manure application, and fertilizer S are the three main sources of sulfate availability in soils. Thus, high organic matter soils, and fields that receive regular manure applications, are less likely or even not likely to experience S deficiency under well-drained soil conditions.

If S is needed, elemental S can be a good choice as part of an annual maintenance application, but a sulfate form will be needed for more rapid availability to help correct any deficiency that shows up during the growing season. Fertilizers containing sulfate include potassium sulfate and sulfate of potash-magnesia (Sulpomag). Both supply K as well as S.

Sulfur requirements of common forage crops are approximately 5 lbs S/ton of legume hay, or 3 lbs S/ton of grass hay. Just like N, S is a component of amino acids and proteins. As a high yielding, high protein forage, alfalfa requires more S than most other crops. Sulfur deficiency can slow growth and reduce yield. Sulfur deficiency has a yellow appearance similar to N deficiency. The way to confirm S deficiency is to conduct a plant tissue analysis. The way to rapidly correct S deficiency is to apply a sulfate containing fertilizer.

A common-sense approach to S fertility management includes occasional plant tissue testing. If your alfalfa comes up short on S, consider adding S as a regular part of your maintenance fertilization program. Ten to twenty pounds per acre of elemental S is a reasonable range of application, depending on crop removal and other sources.

When performing plant tissue analysis, you have the opportunity to review plant status of several micronutrients as well as the major and secondary nutrients. In general, sandy soils and low organic matter soils are more likely to lead to micronutrient deficiency. Manure application makes micronutrient deficiency much less likely.

Plant tissue analysis should be a key step before deciding which micronutrients to apply, if any. Plant tissue analysis can be very instructive when comparing 'good' versus 'poor' areas within a field. Consider taking soil samples from those same areas for concurrent analysis and comparison to the tissue sample analyses.

Soil testing, plant analysis, maintenance fertilization, and timely topdressing when needed, are tried and true practices for top forage production from the high producing alfalfa, grass, and other forage varieties you select for your operation. These best practices can help you manage soil fertility, both for current conditions and for the long term. Put these tools to good use to produce high-yielding forage crops. Hopefully, you can find enough good days to make hay while the sun shines!

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