Thinking about topdressing alfalfa? Some things you should know: 2020 may be a good year to economize
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With hay now being harvested, farmers are turning to topdress decisions. Looking back at research conducted at the Cornell Musgrave Research Farm, alfalfa growing on silt loam soils with regular manure application during corn years prior to alfalfa seeding did not respond to topdress potassium.

HERE’S THE STORY

Corn silage was produced for five years in three types of general treatments: commercial fertilizer only, one of two rates of semi-composted dairy solids, and two rates of liquid dairy manure. The location did not have a manure history prior to planting of corn silage at the start of the research and soil test P and K fertility were both moderate. Once the plots were rotated to alfalfa, for the next four years we topdressed the plots without the manure history with five rates of K, ranging from 0-335 pounds K2O per acre per year.

WHAT WE FOUND

The extra K increased soil test and plant tissue K but did not increase yield averaged over the four years in which topdress K was applied: alfalfa in the zero K plots averaged the same yield as alfalfa that had been topdressed with 335 pounds of K2O per acre (4.0 tons of dry matter/year). Over this time period, soil test K of the zero K plots dropped to medium, while the soil test K of the 335 pound per acre rate plots increased to very high.

What about the compost and manure plots? Soil test K was drawn down over time as hay was harvested and because no topdress K was applied. Annual yields of alfalfa grown in the plots that had received manure or compost were about one ton of dry matter per acre higher than yields in the fertilizer

K APPLICATION TIMING: LATE SUMMER

In the case where K application may be warranted (fields with low soil test K levels and little manure history) it is also important to keep in mind that guidelines generally call for K applications later in the growing season. Applications made early in the season are likely to be luxury consumed by the crop in the subsequent cuttings and therefore not be available to the later season growth where it is most beneficial as the plant prepares for winter dormancy. So where applications are warranted the target timing should be following a later cutting while still allowing time for the plant to take up the nutrient before going into dormancy.
K plots, **showing the overall value of manure for improving crop yields** over time. The plots that received manure at N rates during the corn years started out with very high soil test K levels when alfalfa was established. After five years of alfalfa harvest without additional K fertilizer, soil test K had dropped into the high category.

**ON FARM PLOTS**

In another set of studies, we tested rates of topdress K in farm fields at 15 sites in central NY. When the alfalfa was less than 50 percent of the stand, there was no response to topdress K. When the stand was more than 50 percent alfalfa, there was no response to topdress K when soil test K was more than about 150 pounds per acre. If you are able to apply manure to hay without creating an odor problem, this is a great way to apply K if it is needed.

This research suggests that alfalfa grown on silt loam soils in central NY with good fertility, even when there is NO manure history, may not be responsive to topdressing of K. Fields with manure history are less likely to be responsive. Leave some untreated check strips wide enough to pick up on a yield monitor if you want to learn from conditions on your farm.

To read the original article about this research and also more about forage K tissue testing, see: [https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/d/1976/files/2019/10/WCUVol21No4.pdf](https://cpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/d/1976/files/2019/10/WCUVol21No4.pdf)