



Dairy One

Forage Laboratory

December 2015 Newsletter

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[Corn Silage Harvested in 2015 - Part 2](#)

Soil and Manure Potassium Levels from 2010 to 2015

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Potassium (K) levels in the soil and in crop nutrition has come up at meetings and in conversations a lot this year. This led me to look into our soil testing and manure testing results. In the Agro-One lab, we perform the Mehlich-3, Modified Morgan's, and Morgan's extraction for testing nutrient levels in soils.

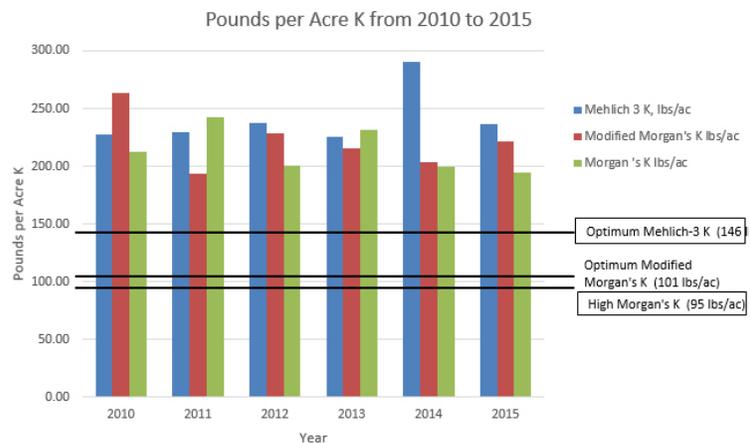


Figure 1. Soil test K results by extraction from 2010 to 2015 from the Agro-One Lab.

Over the last 6 years, the average soil test K level has been high and has remained high for all 3 soil test extractions. The 6 year average for Morgan's was 213.4 lbs/ac K, for Modified Morgan's was 221.0 lbs/ac, and for Mehlich-3 was 241.2 lbs/ac. There is no trend for either increasing or decreasing soil test values. However, the standard deviation of all the extractions was almost equal to the average, indicating a very large range in sample results.

In order to get a better representation of the K status of soils we have tested, Table 1 shows the percent of samples that resulted in a recommendation of no K application for the crop. The Mehlich-3 extraction has the highest percentage of samples that would be recommending K application for crop production, this is also the largest percentage of samples that come into the lab. On average over the last 6 years, 63.3% of the samples submitted to the lab were for Mehlich-3 analysis. The Modified Morgan's extraction

averaged 18.6 % and the Morgan's averaged 18.1% of samples per year over the last 6 years.

Table 1. Percent of samples that result in no K application recommended

Extraction Method	Percent of Samples that Recommend no K Application					
	2010	2011	2012	2013	2014	2015
Mehlich-3 (> 278 lbs/ac)	25.6	25.6	27.3	24.2	38.3	28.8
Modified Morgan's (> 160 lbs/ac)	65.5	46.9	62.2	58.8	53.8	58.0
Morgan's (>150 lbs/ac)*	53.6	65.6	51.3	60.6	54.5	44.4

* In NY, soil test K levels are interpreted by soil management groups; this is the lowest of the high values for soil management group I. [Cornell K Guidelines](#).

After seeing the high soil test levels, I also looked at the manure K values for the last 6 years. The average book value for liquid dairy manure K₂O lbs/1000 gal is 20. In Table 2 are the average results for samples submitted to the lab and identified as Manure, cow liquid. These numbers are all lower than the average book value.

Table 2. Liquid cow manure averages for 2010 to 2015 in the Dairy One Forage Lab.

Item	Year					
	2010	2011	2012	2013	2014	2015
<u>Avg K lbs/1000 gal</u>	16.0	13.9	12.6	15.5	13.1	17.3
<u>SD</u>	8.3	7.3	7.5	8.7	9.0	9.4
<u>Avg K₂O lbs/1000 gal</u>	19.3	16.7	15.2	18.7	15.7	20.8
<u>SD</u>	10.0	8.8	9.1	10.5	10.9	11.3

In conversations this year, I heard concerns that producers are seeing K deficiency problems. After examining the data from the Agro-One lab, here are a few thoughts on the discussions regarding K deficiency concerns in field crops:

1. The majority of the samples we test would recommend some K application for crop production.
2. Our average manure K test values are lower than book values.
3. What values are being used for manure applied to crop field for K level?
4. Are individual field balances done when determining K application?

If you are suspicious of a K nutrient problem, looking into the field history, nutrient application, and adding tissue testing to the management plan will help to pinpoint needs for management to address.

Where to Find Us in January 2016

Meeting Name	Date for 2016	Location
Northeast Plant, Pest, and Soil Conference	January 3 - 7	Philadelphia, PA
Long Island Ag Forum	January 8 - 9	Islip, NY
American Forage and Grassland Council Annual Meeting	January 11 - 13	St. Louis, MO
Georgia Dairy Conference	January 18 - 20	Savannah, GA
2016 Penn Ag Education Conference	January 21 - 22	State College, PA
National Association of Conservation Districts	January 30 - February 3	Reno, NV

Reminder: Holiday Forage and Agro-One Lab Closings

With the upcoming holidays, the Forage Lab and Agro-One Lab will be closed Friday December 25th, and Friday January 1st. Please plan ahead for submitting your samples and receiving results.

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