

H.S. Jansen July 2015 Fields 103 & 103B

1 FIRST CUT

Due to a major fire on the H.S.Jansen farm that burnt down the hay shed and from 1,100 to 1,200 tons of hay the entire first cut from the farm burnt up 10 days ago. The feed company had yet to take samples for feed analysis so we have no protein content on the first cut. Being as the field is just in its second year of production and it was a very vigorous first crop and the harvest timing was good an expectation of 18% protein on the 1st cut is conservative. Hay yield calculated out to 2.8 tons hay as fed or 2.52 tons dry matter per acre.

Using the conversion factor of 6 ¼ pounds of protein contain 1 pound of nitrate nitrogen the nitrogen use for 1st cut was; 2.8 ton hay X 2000 pounds X 90% dry matter X 18% protein divided by 6.25 conversion factor

$2.8 \times 2000 \times 0.9 \times 18 / 6.25 = \underline{\underline{145 \text{ pounds of nitrogen per acre removed on 1}^{\text{st}} \text{ cut.}}$

Soil nitrate levels increased from an average of 12 ppm in April to 14ppm after first cut alfalfa in the beginning of June. The nitrogen used to grow the crop was derived from either the Estimated Nitrogen Releases from the organic matter in the soil from previous manure applications or from the Alfalfa plant itself fixing atmospheric nitrogen in the plant. I consider these levels to be desirable in the fields as they show a reasonable level of available nitrogen to the plant which is required to achieve today's yield goals.

2 SECOND CUT

On Saturday July 4th the fields were cut for the 2nd time in 2015. Soil samples were taken with the results included in this report. The crop was bales Thursday July 9th and the yield will work out to 1.5 – 1.7 tons per acre with protein content expected in the 21% range because of the short cutting interval followed. This cut works out to the following nitrogen removal;

1.6 ton x 2000 pounds x 90% dry matter x 21% protein divided by 6.25 conversion factor

$= \underline{\underline{96 \text{ pounds of nitrogen removed on 2}^{\text{nd}} \text{ cut}}}$

Soil nitrate levels decreased from the 14 ppm average seen after 1st cut to a 9 ppm average on July 4th right after the 2nd cutting. Approximately 38 pounds of the nitrogen removed came from the available pool in the soil while the balance came from either ENR or alfalfa plant nitrogen fixation.

3 SUMMARY

Of the 241 pounds per acre of nitrogen removed from the field so far this year less than 30 pounds of that was removed from the available nitrogen pool in the top 2 feet of the field. The balance has been from either the ENR or nitrogen fixation by the plant. The main reason for planting alfalfa in this field was to use the extra nitrogen available from the manure in growing the alfalfa plant instead of requiring it to fix atmospheric nitrogen which it normally does. Maintaining a program where no manure is to be applied to the alfalfa field will and is only making any efforts to produce a safe and efficient nutrient management plan on this farm more difficult.

If we use even 50% of the 211 pounds of nitrogen from other sources from the manure that would have safely used an additional 1.9 million gallons or almost 10% of the annual available nitrogen from manure on the farm.

4 THIRD CUT PROPOSAL

Assume a 3rd cut equal to the 2nd cut or 1.6 ton hay equivalent @ 21% protein or 96 pounds of nitrogen per acre to grow the cut. Because when we calculate the nitrogen available in the manure we always calculate the total N (available and slow release in the Organic Matter) we should be safe to apply the full amount or **8,400 gallons per acre for 3rd cut**. The ENR from the soil should balance with the nitrogen tied up in the organic matter in the manure.

8,400 gallons per acre times 196 acres = 1.65 million gallons of manure effluent @ 11.5 pounds total N per 1000 gallons.

Gallons per acre to be adjusted by the manure analysis results when they arrive early next week.

Manure test results returned with a nitrogen content of 15.9 pounds per 1,000 gallons. This changes the application rate to 6,000 gallons per acre. A second manure test will be done during application to confirm the numbers as they are a lot higher than any previous test results.

5 THIRD CUT FOLLOW UP

Soil testing after the manure application to be done before and after 3rd cut is done will show how efficient we were at capturing the nitrogen from the manure application. The above calculated amount should be removed by the plants. To maximize crop growth and nutrient uptake the upper soil levels should stay in the medium to high levels while keeping the deeper soil levels in the low to medium levels. As we are starting the cut at quit low soil available levels I would expect most if not all the nitrogen applied would be taken up by the plant. If not there is still the safety factor of 4th cut to cleanup any extra residual nitrogen left in the soil. We would be looking forward to applying an application after 3rd

cut to grow the 4th and help free up manure storage for the coming winter months. It is quite important to the farm to go into winter with a low manure inventory to ensure ample storage until the following spring can begin.