



Effect of Foliar Fertilizers on Alfalfa (20-312a)

Experiment Info:

| | |
|---------------|------------|
| Planted: | 05/01/2017 |
| Harvest: | 07/06/2020 |
| Yield Goal: | 4 tons/A |
| Target Fert.: | 0-20-186 |
| Variety: | |
| Population: | |
| Row Width: | |
| Prev. Crop: | Alfalfa |
| Plot Size: | 10 x 30 |
| Replications: | 2 |

Soil Test Values (ppm):

| | |
|-----------|------|
| pH: | 6.9 |
| CEC: | 6.5 |
| %OM: | 2.2 |
| Bray P1: | 19 |
| Bicarb P: | 0 |
| K: | 117 |
| S: | 16 |
| %K: | 4.6 |
| %Mg: | 18.6 |
| %Ca: | 74.7 |
| %H: | 0 |
| Zn: | 1.4 |
| Mn: | 5 |
| B: | .5 |

Objective:

Evaluate the effects of different foliar fertilizer treatments that are based on cost for effect on alfalfa. In this experiment, two \$10/A and two \$15/A lower cost treatments were developed to compare to a higher priced (\$29.08) fertilizer treatment that is shown in promotional literature. Costs are not listed in Research Reports as they vary around the country. But local prices were used with the goal of showing a positive return with lower prices for dairy. Treatments were applied at 15 gpa to 6" growth after first cutting. Also after the first cutting, 225 lb/A of 0-0-62 was applied to the entire experimental area. Treatments were: Trt 1. 1.85 gal Sure-K (\$10); Trt 2. 1.44 gal Sure-K + 8 oz Manganese + 8 oz Boron (\$10); Trt 3. 2.16 gal Sure-K + 12 oz Manganese + 12 oz Boron (\$15); Trt 4. 2 gal Sure-K + 8 oz Manganese + 8 oz Boron + 1.2 gal accesS (\$15); Trt 5. 2 gal Sure-K + 1 gal Ferti-Rain + 1 gal accesS + 24 oz Manganese + 24 oz Boron (\$29.08). Trt 6. No Foliar. Treatments applied with a backpack sprayer. Harvest samples were collected by cutting the shoots within 3-2.8' rings at uniform positions in the plots. Samples were taken to the lab that day.

Effect of Fertilizers Applied To Alfalfa 18 Days Before the Second Cutting North Central Research Station - 2020

| Treatment: | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------------|----------|----------|----------|----------|----------|----------|
| Fertilizer Cost/A*: | \$10 | \$10 | \$15 | \$15 | \$29.08 | -- |
| 2nd cutting Dry lb/A | 1642.2 | 1793.7 | 1985.5 | 2251.1 | 1907.2 | 1654.2 |
| Dry T/A | 0.82 | 0.90 | 0.99 | 1.13 | 0.95 | 0.83 |
| Calculated Lb Milk/T** | 3069 | 3121 | 3049 | 2976 | 2957 | 2956 |
| Lb Milk/A*** | 2520 | 2799 | 3027 | 3350 | 2820 | 2445 |
| Net Revenue/A **** | \$292.39 | \$325.89 | \$348.22 | \$386.95 | \$309.29 | \$293.38 |
| %NDFD 48** | 59.735 | 60.555 | 60.655 | 59.35 | 58.25 | 55.735 |
| uNDFD 240om** | 11.395 | 11.55 | 12.745 | 12.605 | 11.955 | 13.445 |

* - approximate local costs, would not be the same everywhere.

** - Rock River Labs, Nunica, MI. NIR analysis

*** - (Lb Milk/T)*Yield(T/A) = Lb Milk produced per acre from that volume of alfalfa.

**** - (Figured on \$0.12/lb milk price to farmer) - Fertilizer Cost

Yield (Dry lb/A): LSD(0.1): 238.5; CV: 12.5%

Conclusions:

- The addition of Sure-K only was not effective. The addition of Mn and B did result in higher yield and return for the \$10 treatments. For \$5 more, the addition of accesS to Sure-K and Mn and B was the most effective treatment of all in terms of yield and revenue (a net +\$93.57 return in greater milk production.) Sulfur should be a part of alfalfa nutrition.
- The higher cost treatment increased yield, but not as much, which is somewhat surprising as that treatment has similar product inputs, but at higher rates.
- This was a summer intern project by MSU student Megan Norris. Megan grew up on her family's large dairy operation in NW Michigan.