

## **RESULTS OF THE ALFALFA FERTILITY TRIAL**

A three-year alfalfa fertility trial was completed by MSU Extension at the Gingrich Meadows Dairy Farm in LeRoy, Michigan of Osceola County. This trial was a full-scale test plot encompassing over nine acres of land.

The major objective was to evaluate the value of applying boron and sulfur fertilizers to alfalfa. Hay yields of each of the five replicated trials were taken as well as feed quality tests.

Fertilizers utilized were 10% boron, ammonium sulphate (21-0-0-24), and elemental sulfur (90% sulfur). Boron was applied at the rate of 2 lbs/acre of actual boron (i.e. 20 lbs of 10% boron). Sulfur was applied at a rate of 30 lbs of actual sulfur (125 lbs of A.M.S. or 33 lbs. of 90% S).

Each plot was soil tested each year and phosphorus and potassium were applied according to the soil test recommendation for these two elements.

The soil was a Montcalm loamy sand and a Kalkaska sand. Three cuttings were taken per year and the fertilizer was always spring applied. One control plot was maintained with just phosphorus and potassium applied. Liquid dairy manure had been applied on this plot up to the seeding year of this alfalfa stand. This fertility trial was started the second year of the stand's life.

### **Osceola County MSU Extension Alfalfa Fertility Trial Final Results for 200, 2001, & 2002**

Trial	Yield Tons/acre (82% d.m. hay)	Feed Value/ton	Feed Value/acre	Fertilizer Cost/acre	Net Value/acre
P, K, AMS, Boron	3.01	\$104.89	\$315.72	\$35.54	\$280.18
P, K, Sulfur	2.62	\$100.21	\$262.55	\$24.07	\$238.48
P, K, AMS	2.62	\$102.26	\$267.92	\$28.65	\$239.27
P, K	2.29	\$99.97	\$228.93	\$21.50	\$207.43
P, K, Boron	2.28	\$101.36	\$231.10	\$26.50	\$205.04

Conclusion: There was an advantage of applying sulfur and to a lesser extent boron. It appeared that sulfur was the limiting factor as the sulfur application generated an extra \$31 of net value per acre over no sulfur application. The highest net returning trial was where sulfur and boron were both applied. This trial netted \$73 of more hay per acre than where just phosphorus and potassium was applied (an extra 0.72 ton/acre)! Remember this is net value after the fertilizer cost is taken out, so the fertilizer was more than paying for itself.

There was no significant difference in hay feed value (feed test of protein, energy and fiber) between the different applications. Also, there was no difference between the use of ammonium sulfate as a sulfur source and the elemental 90% sulfur.

The trial was funded by a grant from the Michigan Groundwater Stewardship Program. Thanks also goes to Gingrich Meadows Dairy Farm for their cooperation and understanding for the project.