NM STATE UNIVERSITY

College of Agricultural, Consumer and Environmental Sciences
Agricultural Science Center at Artesia
67 East Four Dinkus Road
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12/17/2013
Morningstar Minerals
Geff McMahon / Robert Wharton
POB 9
Farmington, NM 87499
505-325-2485 / 505-325-6269 (fax)

Dear Sirs:

Please find enclosed a Preliminary Yield Report for the evaluation of the Morningstar Mineral Liquid product on alfalfa. I am awaiting tissue test results from a commercial lab to further evaluate the product's effect on alfalfa.

We were successful at applying 2 gallons/acre of the Morningstar Mineral liquid product on alfalfa between each of 6 harvests during the summer of 2013. We also applied the liquid to corn for silage. Preliminary alfalfa yield information is included with this letter. There was a significant annual yield improvement of 1.4 tons per acre as a result of irrigating alfalfa with a continuous application of the liquid product.

I will have the results from the corn plots that were treated with the liquid product in a few days.

I was unable to plant beans this year due to weather. I will continue with this evaluation on pinto beans next summer if you agree to a no-cost extension on the project.

Robert P. Flynn

Sincerely,
Robert Flynn, Ph.D., Extension Agronomist

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Morningstar Evaluation

Methods

The study location was the NMSU Agricultural Science Center at Artesia (32° 45' 12" N, -104°22' 58" W)(Figure 1) on a Pima silt loam soil. The West side of the field was treated by injecting Morningstar at 2 gallons per acre over the course of a set. A set was usually 12 hours in duration. The product was applied five times during the course of the summer for a total of 10 gallons per acre. Six locations within the treated area (T) and 6 locations in the untreated area (U) were sampled for yield determination. A Hege forage harvester was used to weigh six separate locations in each area to determine fresh weight. A subsample was taken from each harvest location, dried to determine dry matter content, and then ground and sent to Ward Laboratories for standard tissue analysis. Beginning soil test results are presented in Table 1.

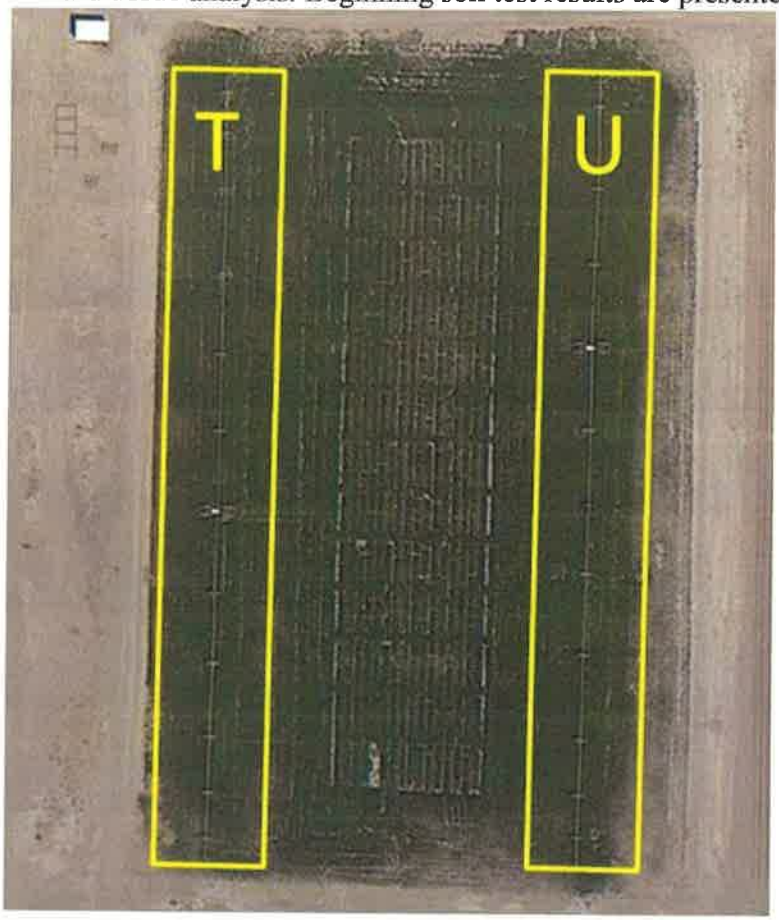

Figure 1. Morningstar evaluation location.

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Table 1. Soil test results from initial sampling of field.							
	pH	EC	NO_3-N	P	K	Fe	Zn
		mmhos/cm	ppm				
Bench 15	8.2	0.79	2.2	23.7	61	7.4	0.4

Preliminary Results

The 2013 harvest information is presented in Table 2.

Table 2. Preliminary yield statistics for Morningstar evaluation on alfalfa.						
Treatment	Cut 1	Cut 2	Cut 3	Cut 4	Cut 5	Total Yield
	Ton (15% dry matter) / Acre					
Morningstar	0.675	1.727	1.704	1./157	0.810	6.074
Control	0.465	1.414	1.739	0.948	0.671	5.236
Yield Diff	0.211	0.314	-0.035	0.209	0.139	0.837
Pr>F	0.02	0.01	NS	0.023	0.008	0.009
LSD	0.274	0.34	NS	0.282	0.141	0.872

Figure 2 illustrates the effect of Morningstar on annual yield.

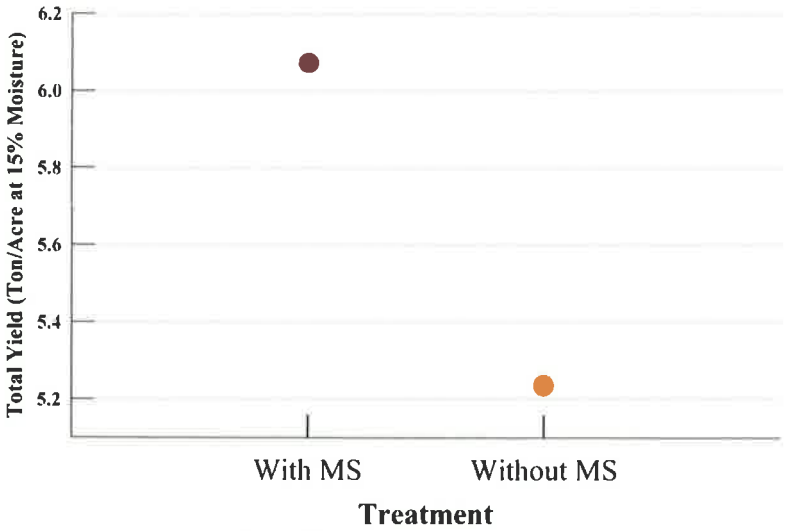

Figure 2. Annual yield at 35% moisture as affected by Morningstar compared to untreated control.