Super Phos® Improves Alfalfa Yield

Research Report

Conducted by: Ayman Mostafa, PhD, The University of Arizona

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This research aimed to study phosphorus (P) fertilizer sources and rates effect on irrigated alfalfa yield using three sources and rates of P fertilizers. The primary objective of this first research study of **SUPER PHOS®** (**SP**) on alfalfa was to determine if a single application of **SP** would provide similar results to conventional fertilizer. Future research will determine optimum rates and timings that will bring about the highest yields.

Materials and Methods

The experiment was conducted on established irrigated alfalfa plants at The University of Arizona, Maricopa Agricultural Center (MAC). The treatments consisted of three phosphorus (P) fertilizer sources: monoammonium phosphate, MAP (11-52-0); phosphoric acid, PA (0-52-0); and Huma Gro® **SUPER PHOS®**, (0-50-0). These fertilizer sources were each applied only one time after the first cut at three P rates: 6, 13, and 19 lb/ac P_2O_5 in addition to an untreated control. Nitrogen was added to **SP** and PA to maintain the same level of N in all the three treatments (Table 1).

A randomized complete block design (RCBD) with four replications on 15 feet wide and 30 feet long plots were used. Yield was measured by harvesting an area of 75 square feet of each plot with a small plot forage harvester at each cutting and weighed fresh. Yield data were analyzed using JMP 11 Statistical software and Student's t-test.

Table 1. Phosphorus Fertilizer Source and Rate.

Treat-ment	Fertilizer Source	Analysis	P_2O_5 Rate (lb/ac) or Equivalent
1	Untreated Control	N/A	N/A
2	MAP	11-52-0	6
3	MAP	11-52-0	13
4	MAP	11-52-0	19
5	PA + Urea	0-52-0	6
6	PA + Urea	0-52-0	13
7	PA + Urea	0-52-0	19
8	**SP** + Urea	0-50-0	6
9	**SP** + Urea	0-50-0	13
10	**SP** + Urea	0-50-0	19

Results

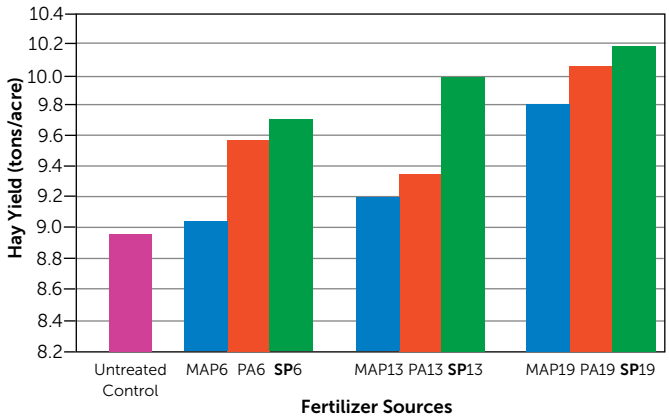

Figure 1. The effect of P fertilizer sources and rates on hay yields.

SP has 0.30, 0.62, and 1.01 ton/ac yield advantages over PA, MAP, and untreated control, respectively (Fig.2).

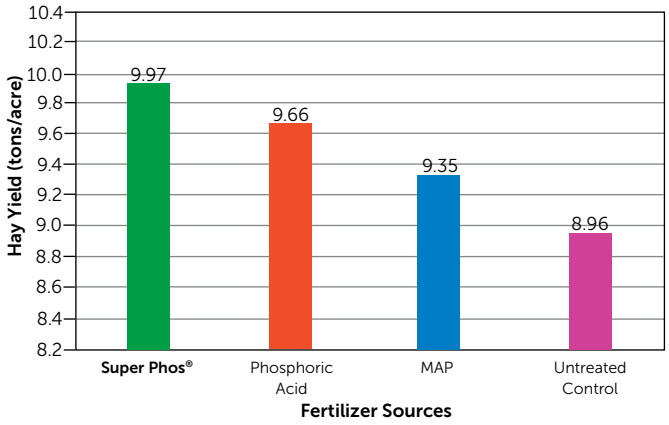

Figure 2. The effect of P fertilizer sources on hay yields (average of 3 rates).

Conclusion

Huma Gro® **SUPER PHOS®** applied at 6, 13, and 19 lb/ac P_2O_5 numerically contributed to the highest alfalfa hay yield in comparison with other phosphorus fertilizer sources. Future studies of **SUPER PHOS®** on alfalfa should investigate the effects of application division and other rates and timings of application to determine maximally efficient alfalfa programs.

1331 W. Houston Avenue, Gilbert, AZ 85233 | 800.961.1220 | Fax 480.425.3061 | info@humagro.com | www.humagro.com

HG-170705-01