Harvesting Nature's Science



Response of Lettuce to HUMA GRO® SUPER PHOS®

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Research Report (U.S. Domestic)

Objective

The objective of this lettuce study was to evaluate the efficacy of **SUPER PHOS®** (**SP**, 0-50-0) at harvest when applied to a low phosphorus field at pre-plant in comparison to monoammonium phosphate (MAP).

Materials and Methods

This study was conducted at the Maricopa Agricultural Center (MAC). The field was low in P, and the experiment was a randomized complete block design with four replications.

The P fertilizer rates were monoammonium phosphate (MAP) and reduced rates of **SP**. The high rate of P applied as MAP was based on the soil-test related P fertilizer recommendations. The lower rates of **SP** were based on possible enhanced efficiency noted by Bio Huma Netics, Inc., personnel. The MAP was applied by hand and the **SP** was sprayed by hand onto listed beds. MAP and **SP** were then power-mulched into the soil.

Plots treated with **SP** also received urea (N) to compensate for the N in MAP. The pre-plant fertilizer was applied by hand and roto-mulched into the beds. All other inputs, including N fertilizer and pest control, were implemented using standard practices. N fertilizer was applied in split application during the season in one side-dress and four water-runs for a total seasonal application of approximately 178.6 lb N/ac.

The fertilizer treatments were as follows:

1. Control (No P)
2. 89.16 lb P/ac MAP
3. 44.51 lb P/ac MAP
4. 0.73 lb P/ac **SP** (0.26 gal/ac)
5. 1.42 lb P/ac **SP** (0.51 gal/ac)
6. 2.85 lb P/ac **SP** (1.02 gal/ac)
7. 5.73 lb P/ac **SP** (2.05 gal/ac)

Lettuce (cv. Grizzly) was seeded in elevated double-row beds on 3.3 ft centers and thinned by hoe at the four-leaf stage to approximately 28,745 plants per acre. The stands were established by sprinkler irrigation. After establishment, all required irrigations were applied by level (no slope) furrows. Soil samples and midribs were collected late season and analyzed for P.

Lettuce was harvested at maturity by cutting and weighing all heads from 19.7 ft of double-row beds. Marketable yield was determined after grading using standard practices. Statistical analyses were performed using SAS (SAS Institute, 1999a and 1999b).

Results

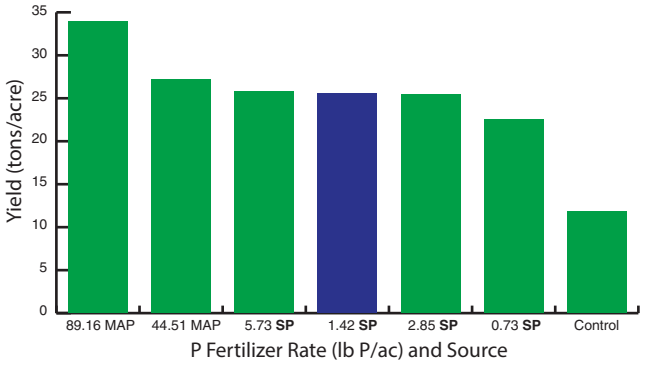

Figure 1. Lettuce Marketable Yield.

- The highest yield was associated with the 89.16 lb P/ac rate as MAP, which corresponds to the University recommendation of P fertilizer for lettuce on a low-testing soil.
- The next highest yield was associated with the 197 lb P/ac rate as MAP. This yield was not significantly different from the 1.42-to-5.73 lb P/ac (0.51-to-2.05 gal/ac) rates as **SP**.

Conclusion

The observation that only 1.42 lb P/ac (0.51 gal/ac) of **SP** produced yields similar to the 44.51 lb P/ac rate as MAP suggests enhanced efficiency associated with **SP**.

NOTE: 1 gallon of **SUPER PHOS®** (12.7 lb/gal at 68°F) is equivalent to 50 lb of P_2O_5 (P_2O_5 x 0.44 = P)

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