Corn Silage Response to Seeding Rate

Trial Objective

- Corn silage is a popular forage for ruminant animals because it is high in energy and digestibility. Maximizing tonnage is a key factor when farmers grow corn for silage.
- Using higher corn populations for silage may help manage phosphorus (P) in heavily manured areas.
- The objective of this study was to determine the effect of seeding rate on irrigated corn silage yield and P uptake.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)
Gothenburg, NE	Hord silt loam	Grain sorghum	Strip tillage	6/16/19	10/11/19	250	24K, 28K, 32K, 36K, 40K, 44K, 48K

- The study was set up as a randomized complete block with three replications.
- A 108-day relative maturity corn product was planted in 30-inch row spacing at 24,000, 28,000, 32,000, 36,000, 40,000, 44,000, and 48,000 seeds/acre.
- Corn was sprinkler irrigated and weeds were controlled as needed. No fungicides or insecticides were applied.
- Silage was hand-harvested one inch above the soil surface to provide a representative sample (Figures 1 and 2) and chopped with a silage chopper.
- Total biomass was collected and weighed, a subsample was dried, and dry matter weight was calculated for each seeding rate.
- Pounds of total P removed was then calculated.

Figure 1. 108RM corn product before silage cutting.

Figure 2. 108RM corn product after silage cutting.

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Understanding the Results

- Average silage dry matter yield increased significantly with increased seeding rates (Figure 3) with the highest tonnage recorded with the 48,000 seeds/acre population.
- Increased seeding rates also increased the lb/acre of P removed with the lowest amount recorded with the lowest population of 24,000 seeds/acre (Figure 4).

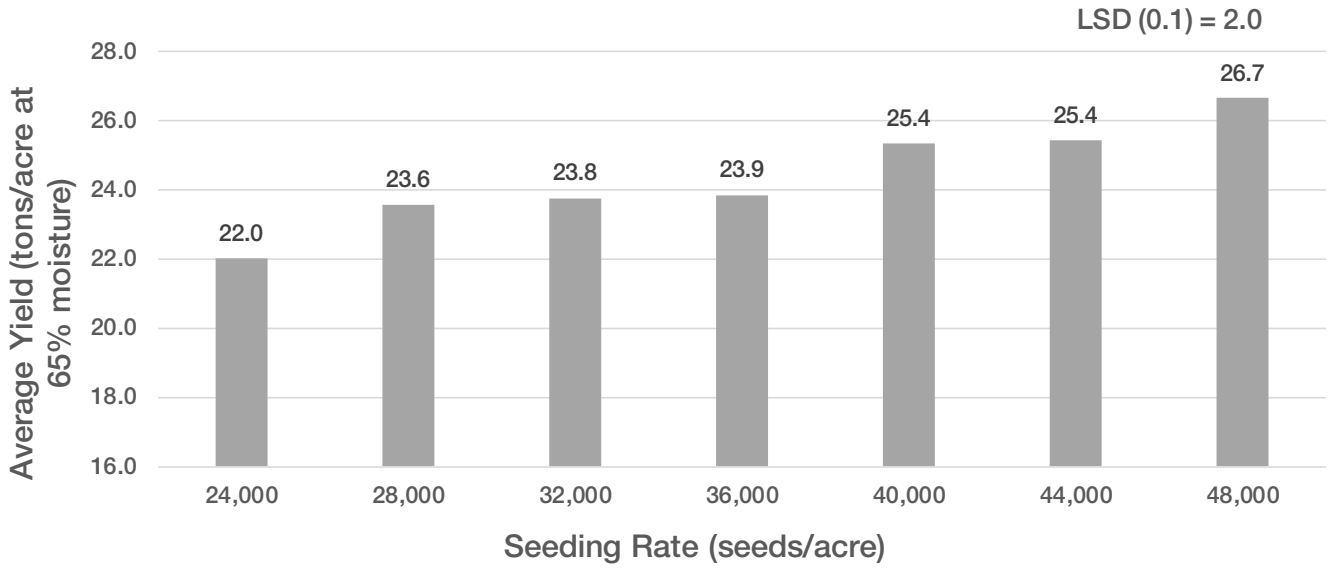

Figure 3. Average silage yield by seeding rate (tons/acre at 65% moisture).

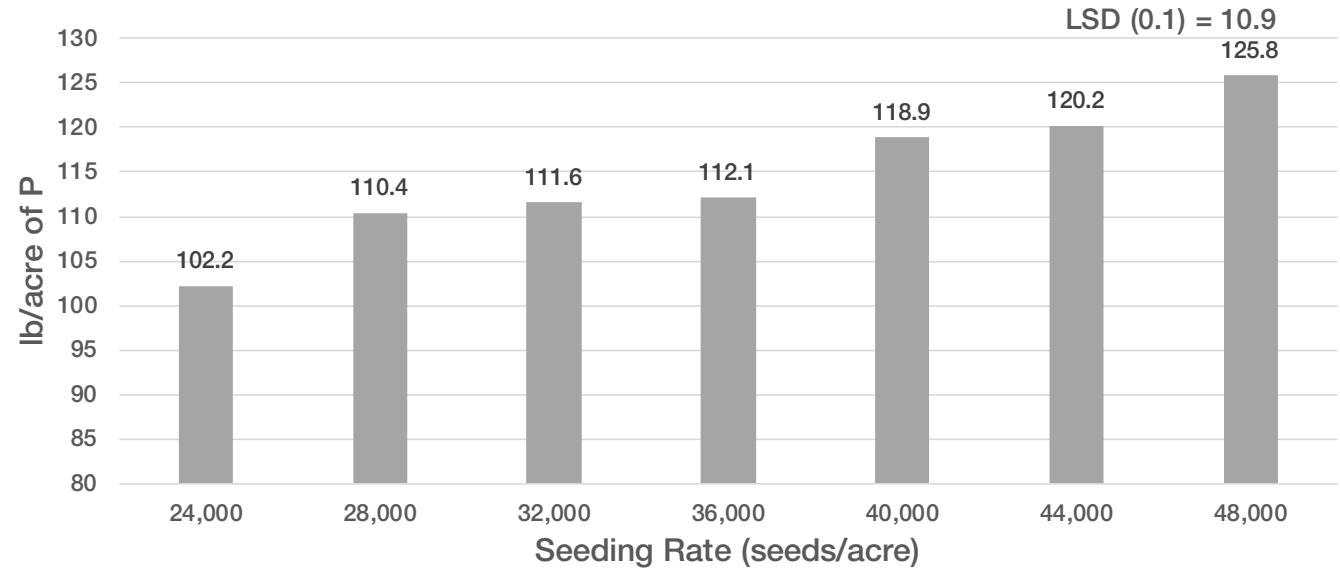

Figure 4. Phosphorus uptake by seeding rate.

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Key Learnings

- Using higher corn populations can be beneficial for increasing tonnage as well as removing P from the soil.
- Producers can utilize high corn silage populations to increase P removal and help manage soil P levels on fields where manure is applied.
- Monitoring crop P concentrations is essential for balancing feed rations and accurately estimating crop P removal, estimates that are in turn necessary for optimizing manure management and avoiding or mitigating soil P enrichment for protection of water resources. Increasing the amount of P removal in harvested crops can help slow the rate at which soil test P increases and help reduce the soil P over time.

Legal Statements

The information discussed in this report is from a single site, replicated demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

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