Seeding Rate

Overview: Seeding rates of 1.0, 1.5, and 2.0 million plants per acre have been established for several different varieties since 2016. In 2018, the varieties used were Shelly, Valda, Lang, and Bolles. Previous years also used Linkert. Trials included 3 replications of the 3 seeding rates for one of the varieties in each field with cooperator equipment along the full length of the field. The established stand and the number of spikes per acre were counted during the growing season. Harvested strips were weighed in a weigh wagon and sampled to measure moisture, test weight, and protein content. In 2018, the cooperators had the option to weigh each strip in a grain cart with a scale if one was available, however protein, TW, and moisture were not sampled from these plots.

Results:

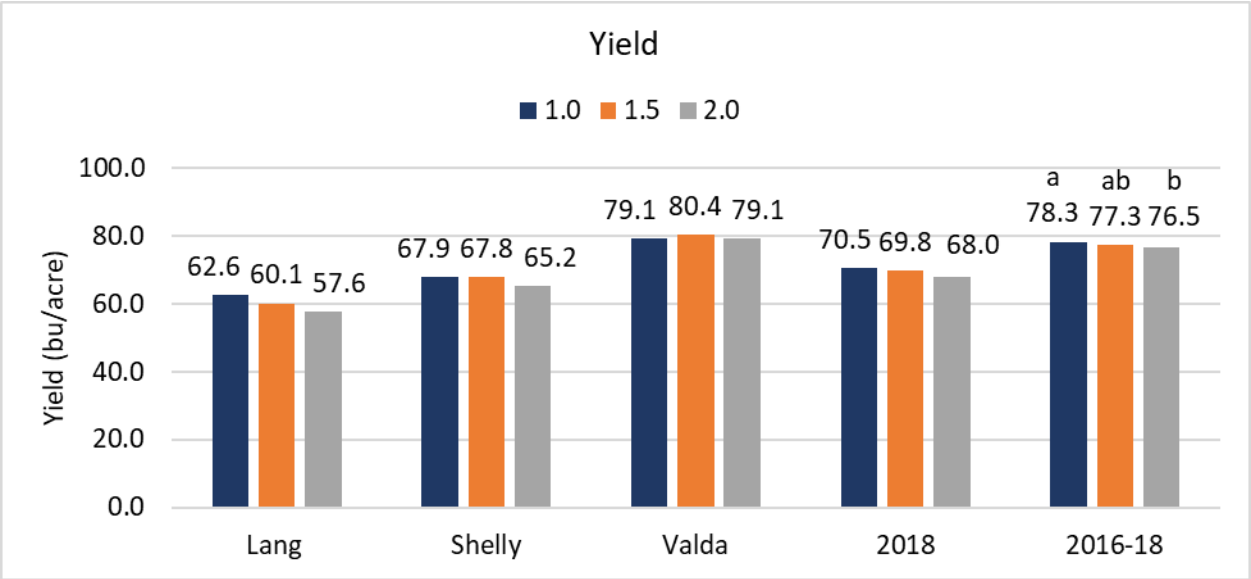

Figure 1. Yield from 2018 for the varieties Lang, Shelly, Valda, and the combined results across all varieties tested from 2016-2018. Differing lowercase letters indicate significant differences between treatments at the 90% confidence level.

- The number of tillers per plant at the 1 million seeding rate was significantly greater than the 2 million seeding rates for at all locations in 2018 (data not shown).

- The total number of spikes per acre was not different within each variety in 2018. However, when combined across all varieties the 1.5 and 2 million seeding rates had 2-300,000 more spikes per acre than the 1 million seeding rate (data not shown).

- Yield was not significantly different among seeding rates in 2018. When combined across the 27 locations from 2016-2018, the lowest seeding rate yielded 2.3 bu more than the higher seeding rate (Figure 1).

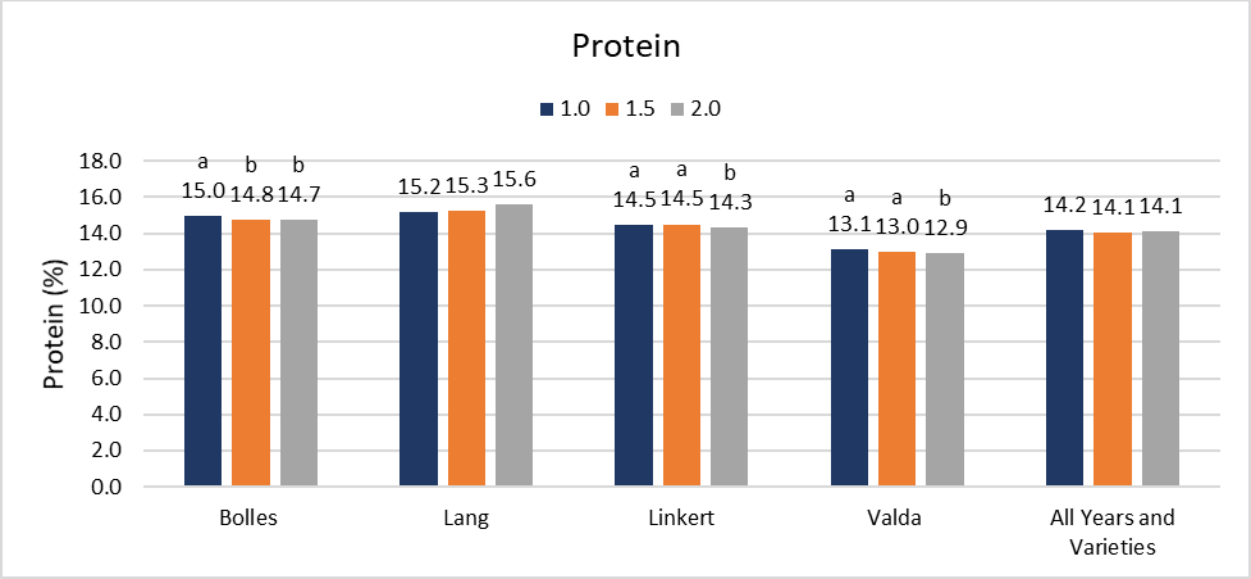

Figure 2. Protein response to seeding rate among the varieties used from 2016-2018. Shelly was excluded due to having only one location of protein data. Differing lowercase letters indicate significant differences between treatments at the 90% confidence level.

Table 1. Economic analysis of seeding rate for 2018 locations averaged across varieties.

Seeding Rate		Seed Cost[1]	Yield	Gross Income	Net Income
mil seeds/acre	bu/acre[2]	$/acre	bu/acre	$/acre	$/acre
1	1.5	$ 18.00	70.5	$ 401.04	$ 383.04
1.5	2.2	$ 26.40	69.8	$ 397.24	$ 370.84
2	2.9	$ 34.80	68.0	$ 386.87	$ 352.07

1 Certified seed cost at $12 per bushel.

2 Estimated based on an average of 750,000 seeds per bushel.

Conclusions:

- Decreasing stand density with a reduced seeding rate increased tiller production, which may have reduced competition for resources between plants resulting in equal or greater yields over stands seeded at a higher rate.
- While not measured at any of the locations, anecdotal lodging observations found that the higher seeding rate was more prone to lodging, while the lower seeding rate was still standing following strong winds.
- In most cases, a seeding rate of 1 million plants per acre will yield just as well or sometimes even greater than a seeding rate of 1.5 or 2 million plants per acre, increasing overall net income (Table 1).
- Reduced competition for resources could potentially explain the trend toward a 0.1-2% difference in protein content between the high and low seeding rates.