Malt versus Feed Barley

Barley producers need to be aware of the importance of seeding rate and nitrogen management for malt and feed varieties. Higher seeding rates have been found to both maximize yield and improve acceptance for malt barley. Managing nitrogen is particularly important for malt barley where protein levels must not exceed 12.5%. Nitrogen rates for feed barley can be higher as high protein is not a concern.

The objective of this trial was to demonstrate that newer malt varieties can provide comparable yield to the best feed varieties and to demonstrate management practices for the contrasting varieties. The trials were conducted at Yorkton, Redvers, Indian Head, Swift Current, Scott, Outlook, Prince Albert, and Melfort in 2019. The treatment consisted of two varieties [AAC Synergy (malt), CDC Austenson (feed)], two seeding rates (200, 300 seeds/m^2), and three nitrogen rates including residual + fertilizer (80, 120, 160 lb N/ac).

The yield difference between the malt variety AAC Synergy and feed variety CDC Austenson did vary between locations (Table 1). However, when averaged across location, there was a little difference between the yield of two varieties. There may be little reason to grow a feed variety over AAC Synergy which has a similar yield to the best feed varieties and is gaining acceptance with maltsters. Increasing seeding rate did not increase yield, decrease protein or improve any quality factors for malt barley. However, increasing N did increase protein and tended to decrease % plump. In many cases it was not possible to compare the optimum level of N between the feed and malt varieties. At five locations, the yield of both varieties was unresponsive to increasing N levels above 80 lb/ac (soil + applied N). This means the economic level of N for these sites was below 80 lb/ac for both the feed and malt barley varieties. At Yorkton, the most economic level of N for both varieties would have been above 160 lb/ac as yield was highly responsive to added N and protein levels remained relatively low.

A fair comparison of the most economic rate of N was only possible at Scott, where the most economic N rates for the malt and feed varieties were 155 and 123 lb/ac, respectively. While there is more risk associated with applying too much N to malt barley, there was little evidence to suggest the most economic rate of N is higher for feed than malt.

This project was funded through the Agricultural Demonstrations of Practices and Technologies and Saskatchewan Barley Development Commission.

Table 1. Main effects of variety, seeding rate and nitrogen rate on barley grain yield at multiple locations in 2019. Means for each main effect within a column followed by the same letter do not significantly differ.

Main effect	Yield							
	Indian Head	Melfort	Outlook	Prince Albert	Redvers	Scott	Swift Current	Yorkton
Variety	---------- *kg ha^{-1}* ----------							
AAC Synergy	5048 a	4537 b	7909 a	4014 b	5302 a	4975 a	3323 a	7354 a
CDC Austenson	4916 b	4969 a	7559 a	4685 a	5046 b	5126 a	2968 b	7261 a
Seeds/m^2								
200	5001 a	4817 a	7660 a	4288 a	5270 a	5073 a	3249 a	7349 a
300	4963 a	4689 a	7807 a	4411 a	5078 a	5029 a	3041 a	7265 a
lbs N/ac								
80	5046 a	4416 a	7613 a	4532 a	5288 a	4590 c	3090 a	6449 c
120	4984 a	4845 ab	7778 a	4171 a	5284 a	5136 b	3068 a	7457 b
160	4916 a	4998 a	7810 a	4346 a	4950 b	5427 a	3279 a	8016 a