

Growers in southeast Saskatchewan have been experimenting with and expressing interest in grain corn production with recent varietal improvements in corn, and disease issues and narrow profit margins for more traditional cereal crops. The challenge with grain corn is that, while dramatic improvements have been made, the heat unit requirements are such that slightly below normal growing season temperatures or early frost could have severe impacts on yield and quality.

The objective of this demonstration was to provide growers with an opportunity to observe the phenological development of potentially adapted grain corn hybrids over the course of the season at Indian Head and provide insights in the potential yields that might be expected with this crop. Three separate early maturing corn hybrids (P7005AM, P702AM, and P7332) rated for 2000-2050 corn heat units, and with a range of comparative relative maturity ratings, were seeded using a no-till plot drill on May 11, 2017 at Indian Head. Because we were not equipped with the preferred seeding and harvest equipment, yield was not intended to be a primary focus but will still provide a conservative estimate of the potential yields and profits that might be expected with corn.

Emergence was slow and variable under the dry conditions while seed distribution was also less uniform than ideal. Plant height was similar for each of the three varieties ranging from 195-202 cm (Table 1). Harvest was completed on October 12 which was, in hindsight, likely at least 5-10 days earlier than optimal (maximum moisture content of <30%). The average grain moisture contents (determined using wet/dry weights) were 30.5% for P7005AM, 35.8% for P7202AM, and 44.4% for the latest maturing variety, P7332. Due to variable emergence and poor distribution combined with overall conditions (less than 50% of normal growing season precipitation), grain yields were low with the highest yielding variety averaging only 3913 kg/ha (62 bu/ac). The two earliest hybrid (P7005AM and P7202AM) had similar yields while yield of the latest maturing hybrid (P7332) was substantially lower with only 3075 kg/ha (49 bu/ac). Using provincial estimates of production costs and the actual yields, all varieties resulted in a net loss (\$88-154/ac) and the break-even yield was 5376 kg/ha (80 bu/ac).

Overall, the results of this demonstration support the use of the earliest maturing hybrids possible and suggest that, while grain corn has potential to be a profitable cropping option in southeast Saskatchewan, it

requires significant infrastructure investments (i.e. planter, header, drying equipment) to be a major crop. Furthermore, yields are likely to be variable with potential for substantial losses due to early fall frost and/or late-season drought.

This project was supported by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada-Saskatchewan Growing Forward bilateral agreement.

**Table 1. Plant height, harvest moisture and seed yields in ADOPT grain corn demonstration at Indian Head, 2017. Means within a column followed by the same letter do not significantly differ (Fisher's protected LSD test,  $P \leq 0.05$ ).**

Variety	Height	Harvest Moisture	Grain Yield	
	----- cm -----	----- % -----	---- kg/ha ----	---- bu/ac ----
P7005AM	195 a	30.5 c	3677 a	58.5 a
P7202AM	202 a	35.8 b	3913 a	62.2 a
P7332	201 a	44.4 a	3075 b	48.9 b
S.E.M.	2.3	1.06	102.1	1.62
Pr > F (p-value)	0.193	< 0.001	0.003	0.003
C.V. (%)	2.3	5.8	5.7	5.7