



Large oat seed improves emergence, vigour and yield

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Seeding large seeded oats improved early season oat biomass by 16% and 29% at two locations in eastern Saskatchewan. Large seeded oats also improved wild oat competition and resulted in 4 days earlier maturity. Yield was 8% higher at one site with large seed.

Field trials using CS Camden oats were direct seeded near Yorkton and Indian Head, Saskatchewan with 4 replications in 2018. A seed lot of CS Camden was screened to remove the small seed constituting 8% of the original mass. This created 3 seed lots of large (42 mg/seed), small (26 mg/seed) and unscreened (41 mg/seed) seed sizes. These seed lots were sown 1 inch deep at 3 seeding rates of 100, 200 and 300 seeds/m². In addition, the 200 seed/m² rate was seeded deep at 3 inches.

While the vigor of the seed lots all tested over 98%, oats grown from small seed was found to be less vigorous than oats from large seed. Compared to large seed, emergence for oats from small seed was 13% poorer at Yorkton and 4% poorer at Indian Head. Early season biomass for oats from small seed was 16% lower at Yorkton and 29% lower at Indian Head. Seeding deeper tended to further reduce emergence and early season biomass at both locations.

Small versus large seed oats seeded deep (3”) at Yorkton



Photo by Mike Hall

Improved wild oat competition with large seed

Increased oat biomass contributed to improved wild oat competition and earlier maturity. While wild oat pressures were low at both locations, increasing seeding rate from 100 to 300 seeds/m² significantly reduced wild oat pressure from a visual rating of 1.5 to 0.5 out of 10 at Indian Head. No differences were detected at Yorkton as wild oat populations were quite low.

Although oats from large seed emerged more vigorously at both locations, this only resulted in significantly higher yields at the Yorkton site. Oats grown from the large seed yielded 175 bushel/acre (8% higher) with the small seed at 162 bushels per acre at Yorkton, but seed size did not significantly affect yields (115 bu/ac) at Indian Head.

Maturity ratings were lost at Yorkton, but increasing seeding rate from 100 to 300 seeds/m² significantly hastened maturity by 4 days at Indian Head. Seeding deep and seeding oats with a small seed size statistically delayed maturity, but the differences were within a day and not agronomically important.

Increasing seeding rates from 100 to 300 seeds/m² did not improve yield at either location in this study. This was likely due to dry conditions and greater inter-plant competition for soil moisture as seeding rate was increased. However, the high seeding rate should still be recommended as it hastened maturity by 4 days and reduced wild oat pressure at Indian Head.

Test weights were not significantly different between seed size. The observed test weights were well above the minimum of 240 g/0.5 l required for milling oats.

While the small seed size oats were clearly less vigorous, their removal did not statistically improve the quality of the seed lot. In other words, large seed size oats did not statistically outperform the unscreened seed lot. This was likely because the seed lot was of very high quality to begin with and contained only 8% small seed, as evident in the very similar TKW values for the large and unscreened seed. However, removal of small seed does have the potential to improve seed lot quality.

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Hall, M., and Holzapfel, C. 2018 Research Report. Oat improves with larger seed size.