



Improving tame oat competitiveness with wild oat

CATEGORY [weeds](#) | October 31, 2018

Seed 35 seeds per square foot and apply at least 13.4 lbs. P_2O_5 per acre to improve wild oat competitiveness and increase tame oat yield.

A three-year study was conducted at Agriculture and Agri-Food Canada Indian Head to determine if side-banded phosphorus (P) in combination with higher seeding rate would increase the competitive ability and yield of tame oat when wild oat competition was present. The research was conducted from 2003 through 2005 and recently published in the Canadian Journal of Plant Science in 2018.

The four seeding rate treatments were 15, 25, 35 and 45 plants per square foot (150, 250, 350, and 450 plants/m²) and the three P rates of 0, 13.4 and 26.7 lbs. P_2O_5 /ac (0, 15, and 30 kg P_2O_5 /ha). In each of the three years, the plots had low soil P test levels of 12.5, 17.8, and 16.9 lbs. P/acre (14, 20 and 19 kg P/ha).

Two wild oat treatments were compared: weed free and high density of 10 plants per square foot (100 plants/square metre).

Seeding date was early to mid-May. All the fertilizer was side-banded 1 inch (2.5 cm) to the side and 2 inches (5 cm) below the seed. The row spacing for the tame oat was 12 inches (30 cm). The target level of total nitrogen (N), a combination of residual soil nitrate (0–60 cm soil layer) and fertilizer N was 71 lbs. per acre (80 kg/ha). Potassium (K) and sulfur (S) were applied according to soil test recommendations. Excellent broadleaf weed control was achieved with in-crop herbicides.

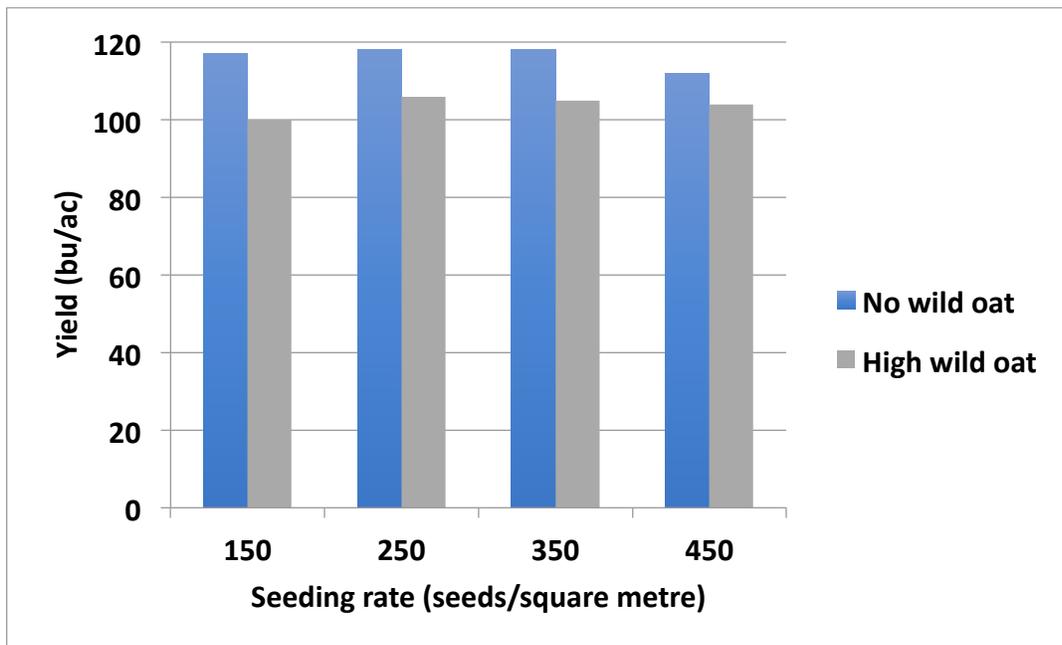
Overall, increasing the seeding rate increased plant density, the number of panicles per square foot, the number of panicles per plant, and tame oat biomass. The increase in tame oat biomass improved wild oat competition. Increasing the seeding rate above 15 seeds per square foot resulted in a 5 per cent increase in tame oat yield in the plots with wild oat competition.

Increasing the seeding rate also reduced wild oat seed production by 80% in 2004 and 59% in 2005. Under the dry 2003 conditions, wild oat seed production was not affected by seeding rate.

While increased seeding rate did improve tame oat competitiveness, wild oat competition still decreased grain yield by 23% in 2003, 4.4% in 2004, and 11% in 2005.

From this and other oat research, a seeding rate of 35 seeds per square foot (350 seeds/ m²) is recommended for oat in fields with wild oat infestations.

The effect of seeding rate and wild oat density on tame oat yield



Source: W.E. May, 2018

Phosphorus

The application of P increased the competitiveness of tame oat by increasing crop biomass by 7.6% and grain yield by 3.4%. The P fertilizer rates of 13.4 lbs. P₂O₅ /ac and 26.7 lbs. P₂O₅ /ac yielded 111 bu/ac (4.24 T/ha) compared to 107 bu/ac (4.11 T/ha) when no P was applied.

The competitiveness of tame oat with wild oat was also improved with increasing P rates. There was a reduction in wild oat seed production by 38% with P fertilizer application, likely due to an increase in tame oat biomass.

The researcher concluded that P fertilization and seeding rate can be managed independently of each other to increase the competitiveness of an oat crop, improve the control of wild oat seed production, and increase tame oat yield.

May, W.E. 2018. Altering the competitiveness of tame oat (*Avena sativa* L.) versus wild oat (*Avena fatua* L.) with phosphorus and seeding rate. Can. J. Plant Sci. 98: 582-590.

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