

A challenge with winter wheat production is the successful establishment and overwintering of the crop. A potential strategy for improving establishment is to use higher seeding rates as well as seed treatments. Another challenge in winter wheat production is disease management. Foliar fungicides may provide control of leaf and head diseases in winter wheat.

A field demonstration was conducted at Indian Head in 2013 and 2014, and Scott in 2014 to measure the individual and combined benefits of seeding rates, seed treatments and foliar fungicides on winter wheat establishment and yield. The treatments evaluated were a combination of three seeding rates (200, 300, and 400 seeds per m<sup>2</sup>, seed treatment (treated or untreated seed), and fungicide application (check or fungicide applied). The seed treatment was 325 mL/kg seed Raxil Pro and the fungicide was 0.2 L/ac Twinline at flag-leaf and 0.324 L/ac Prosaro at anthesis.

At Indian Head in 2013, there were only two seeding rates (200 vs. 400 seeds m<sup>-2</sup>) and no foliar fungicide component. Both factors had a significant impact on seed yield with seed treatments increasing yields by 15%, and the higher seeding rate resulting in a 17% yield increase. The substantial response may be partly explained by the extremely dry conditions at Indian Head in the fall of 2012, such that the crop did not emerge until spring.

At Indian Head in 2014, grain yields increased 2.1% with a seed treatment and 2.4% with an increase in seeding rate from 200 to 400 seeds/m<sup>2</sup>. Foliar fungicide had the greatest impact on yield with an average increase of 14%.

At Scott in 2014, seed treatment resulted in a 9% increase in grain yield. At this location, the effect of seeding rate was not significant, thus the benefit of a seed treatment appeared to be independent of the seeding rate. Again, foliar fungicide had the greatest impact on winter wheat yield with an average overall increase of 29%.

The response to seed treatments was consistent, with significant impacts on grain yield at all three sites. The results suggest that seeding winter wheat at 300 seeds/m<sup>2</sup> or higher and using treated seed may increase the likelihood of strong establishment and overwintering, particularly under stressful conditions. In addition, the yield increase with foliar fungicides was substantial at both locations in 2014.

