



Maintaining test weight in milling oats

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Seeding early should increase the likelihood of harvesting quality grain before weathering, but this did not guarantee higher yields or higher test weights. Generally, 71 lbs. N/ac resulted in optimum test weights and often produced optimum economic returns. Selecting a variety with genetics for high test weight was also important.

Trials were established at Yorkton, Melfort and Indian Head, Saskatchewan in 2019 to assess the impact of variety, seeding date and nitrogen (N) rates on milling oat test weight. The varieties CS Camden and Summit were compared at N rates of 35, 71 and 107 lbs. N/ac (40, 80 and 120 kg N/ha). Other macronutrients were applied according to soil test. Plots were seeded with a SeedMaster drill on 12 inch row spacing. Soil N was at moderate levels at Indian Head (44 lbs./ac; 0 – 24”) and Melfort (30 lbs./ac; 0-12”) and somewhat lower at Yorkton (32 lbs./ac; 0-24”).

Past research found oat yield and grain test weight are likely to be higher with earlier seeding. In this research, at Melfort and Yorkton, yield was not significantly different between early and late seeding. At Indian Head, seeding early (May 3) resulted in higher yield for CS Camden, but Summit produced its highest yield when seeded late (May 29).

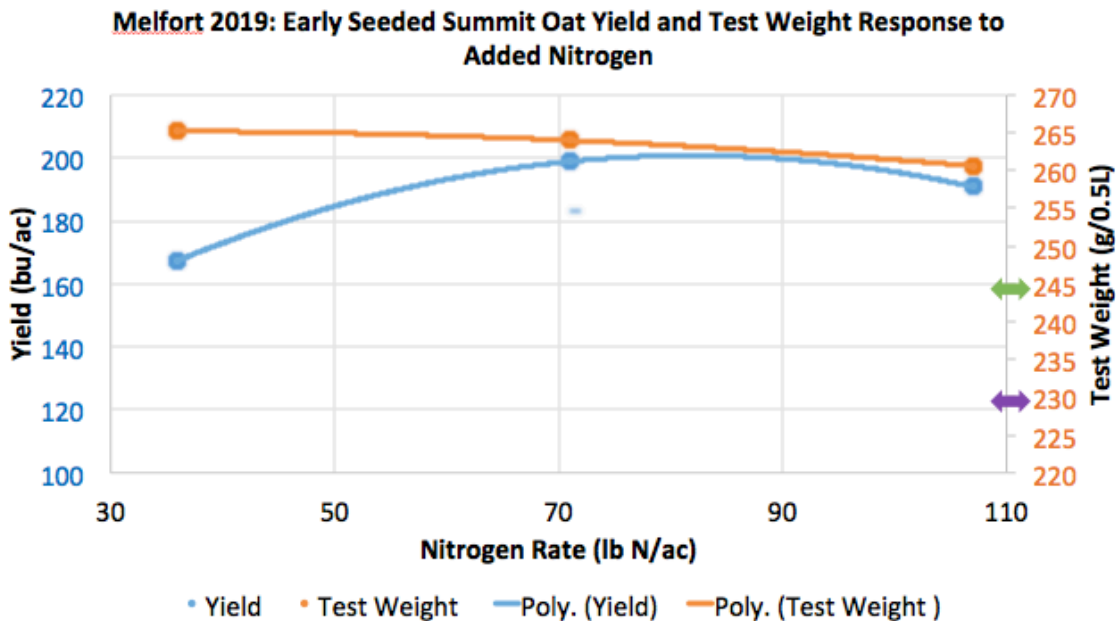
Linear increase in yield with N

On average, raising N rate from 35 to 107 lbs. significantly increased yield by 18% at Yorkton and 34% at Melfort with yields hitting up to 200 bu./ac. At Indian Head for the early seeding date, yield peaked with 71 lbs. N, and declined with 107 lbs. N. When seeded late, oat yield at Indian Head increased with added N but at a modest and insignificant rate. Yield potential was moderate at Indian Head (about 120 bu./ac) and soil N levels were moderate with 44 lbs. N/ac in the top 24 inches of soil. This may account for the low yield response to added N at Indian Head.

Milling oats can be discounted with tests weights below 245 g/0.5l (42.5 lbs./A bu) and are rejected below 230 g/0.5l (40.1 lbs./A bu). Test weights were much higher at Yorkton and Melfort. At Yorkton, Summit had a significantly higher test weight of 260.8 g/0.5l versus 251.9 g/0.5l for CS Camden.

Summit oat less likely to be discounted

At Melfort, Summit produced a higher test weight of 265.9 g/0.5l compared to 261 g/0.5l for CS Camden. However, there was strong variety by seeding date interaction at Melfort. When seeded early the difference in test weights was greater with Summit (263.2 g/0.5l) than Camden (255.3 g/0.5l). When seeded late, test weights were similar with Summit and Camden.



Source: Hall et al. 2019

Overall, test weights were low at Indian Head with Summit producing an average test weight of 243.7 g/0.5l and Camden at 231.9 g/0.5 l.

Whether seeded early or late, Summit was less likely to be discounted or rejected than CS Camden on the basis of test weight as N rates were increased at all sites. When seeded early at Indian Head, CS Camden would have been discounted at all nitrogen rates, but Summit would not have been discounted until 107 lbs. were applied. When seeded late at Indian Head, test weights were even lower and discounts would have been worse. CS Camden would have been rejected at N rates of 71 lbs. and above. In contrast, Summit would not have been rejected at any rate of N.

At Yorkton, test weights were much higher and none of the treatments would have produced oats with test weights low enough to be discounted. Summit maintained higher test weights than CS Camden at all rates of N. At Melfort, test weights were very high (254 g/0.5l +) and no treatment resulted in a test weight low enough to trigger a discount.

The results from all the sites clearly indicate that Summit can maintain higher test weights compared to CS Camden when yields are pushed with higher rates of N. This Summit has less risk of being discounted on the basis of test weight compared to CS Camden. Generally, the 71 lbs. N/ac rate did not result in rejection for milling and often produced optimum economic returns. While seeding earlier did not guarantee higher test weights, it is still a good practice as early seeding will likely favor harvest under ideal conditions.

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Mike Hall, Heather Sorestad, Jessica Pratchler, and Chris Holzappel. 2019. Maintaining Test Weight Stability of Milling Oats. (ADOPT# 20180443)