

Wheat is a primary cereal crop in many prairie crop rotations, however as years pass, net profitability has declined. Significant improvements in yield capabilities have been achieved due to advancements in breeding, however agronomic research has lagged behind. Various market classes of wheat exist, and thus tailoring management practices to specific wheat classes may enhance overall profitability.

To investigate how different classes of spring wheat can be managed to optimize profitability, small plot research trials were conducted at Melfort, Scott, Yorkton, Swift Current and Indian Head, SK in 2017 and 2018 for a total of 10 site-years. Three different input packages were used including: Conventional (200 seeds/m²; 75 lbs N/ac; 25 lbs P/ac), Enhanced (300 seed/m²; 98 lbs N/ac; 33 lbs P/ac; Flag leaf fungicide), and Intensive (360 seeds/m² + Seed treatment; 120 lbs N/ac; 40 lbs P/ac; Flag leaf & Heading fungicide; Plant Growth Regulator). Six different varieties were chosen from three different spring wheat market classes: Canadian Western Red Spring (CWRS), Canadian Prairie Spring (CPS), and Canadian Western Soft White Spring (CWSWS). Data collection for the trial consisted of plant density, maturity, yield, quality, and economics.

Plant densities increased as management intensified at all sites. The CWRS varieties were arguably less effected by inter-plant competition as compared to CPS and CWSWS, as higher plant densities were observed at the highest seeding rate. The higher plant densities of CWRS varieties under intensive management also indicates that they may be more responsive to seed treatment as compared to CPS and CWSWS varieties. When comparing maturity 80% of the time CWRS varieties were the earliest maturing, however differences were often only days apart.

When comparing final yields CWSWS had the highest yields, while CPS and CWRS varieties were quite comparable (Figure 1). Yields increased as management intensified and over the three years an average yield gain of 4-5bu/ac occurred between the three management levels.

Related to the grain quality, test weights and TKW were relatively reflective of varietal differences and were less affected by management. The %FDK was relatively low overall and provided very little insight into treatment differences. Protein differences were significant between varieties, however intensive management of lower protein varieties was more likely to increase protein whereas higher protein varieties were less responsive to increases in protein with intensifying management.

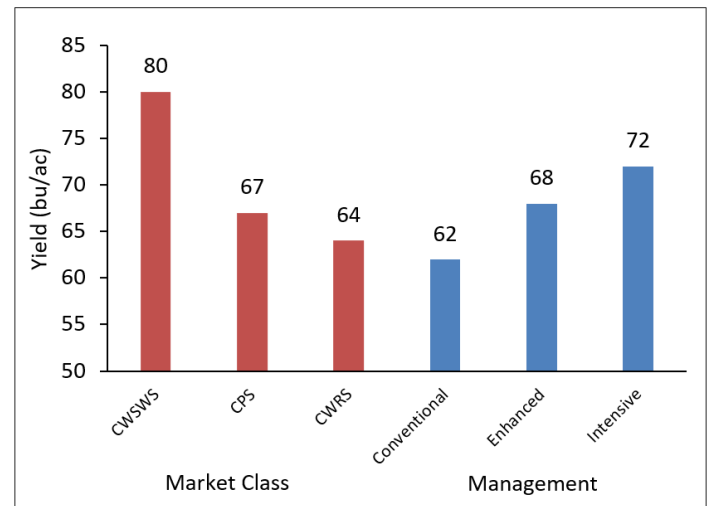


Figure 1. Two-year yield average across 10 site years for spring wheat market class and management practices.

Overall, CWRS varieties were most economical and resulted in the greatest net profits under conventional and sometimes enhanced management. Indian Head and Swift Current were the lowest yielding sites and were often not economical regardless of market class. Although, CWSWS varieties were the highest yielding, protein premiums and higher prices for CWRS wheat resulted in greater profitability. When CPS and CWSWS were profitable they were best under conventional management, or with minimal inputs.

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