Input Study: Intensive Wheat Management Factsheet

Objective:

- To enhance wheat profitability by incorporating some or all components of intensive wheat management
- To identify how wheat classes and varieties are affected by enhanced wheat management
- To identify how interactions of wheat genetic characteristics respond to varying soil and climate conditions across Saskatchewan

Methodology:

The trial was conducted at five locations (Indian Head, Melfort, Scott, Swift Current, and Yorkton) over a three-year period (2017-2019). The study consisted of six wheat varieties from three wheat classes: Canada Western Red Spring (CWRS), Canada Western Soft White Spring (CWSWS), and Canada Prairie Spring Red (CPSR). Each variety was grown under three progressively intensified management levels (Table 1).

Table 1. Management level descriptions for the Input Study: Intensive Wheat Management at five locations from 2017 to 2019.

Management Level	Seed Treatment	Seeding Rate (seeds/m2)	Nitrogen Rate (lbs N/ac)	Phosphorus Rate (lbs P2O5/ac)	Fungicide at Flag Leaf	Fungicide at Anthesis	PGR Application
Conventional	No	200	75	25	No	No	No
Enhanced	No	300	98	33	No	Yes	No
Intensive	Yes	360	120	40	Yes	Yes	Yes

Key Findings:

- CWRS varieties increased plant populations by an average of 103 to 112 plants/m^2 between the Conventional and Intensive management treatments. Whereas in the CWSWS and CPSR varieties, this increase was lower and ranged from 79 to 86 plants/m^2. This suggests that CWRS varieties may be more responsive to the seed treatment applied in the Intensive management treatment than the other two wheat market classes. Additionally, Enhanced management treatments tended to result in improved populations, with only slight improvements made by increasing to Intensive management.
- Enhanced management often led to hastened maturity across all varieties. However, under Conventional and Intensive management, varietal selection is important for hastening maturity.
- Intensive management resulted in maximum yield for CWRS and CPSR varieties, while CWSWS were less responsive to management level. Conversely, protein levels of CWRS and CPSR varieties were less responsive to management, while CWSWS benefited the greatest from Intensive management.
- FDK values were largely reflective of genetic differences, with Enhanced management providing increased control relative to Conventional management.
- CWRS varieties tended to be more profitable than CWSWS and CPSR varieties, with Conventional management providing the best net returns.
- The results of this experiment indicate that the Conventional management of wheat in Saskatchewan continues to provide the best return on investment.

The full report is available on www.warc.ca. This project was funded by the Saskatchewan Wheat Development Commission and the Saskatchewan Ministry of Agriculture through the Agricultural Development Fund.

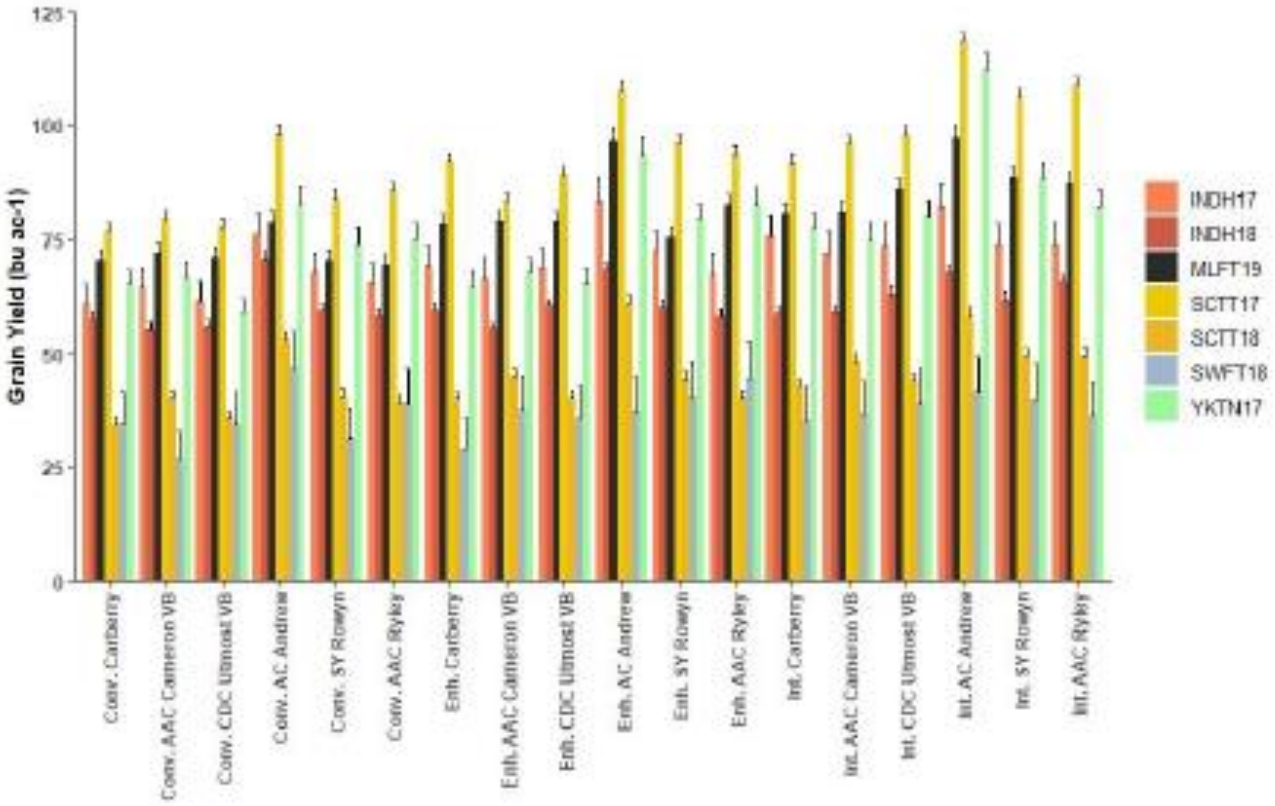

Figure 1. The effect of variety and management interaction on grain yield (bu/ac) for the Input Study: Intensive Wheat Management at five locations in 2017, 2018, and 2019.

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